Spreckels Sugar Beet Bulletin

Vol. 31 Spring 1967 No. 1 [pages 1-12]

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PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 31 SUMMER, 1967 JE 23'67 NO. 2

WESTSIDE WATER

The San Luis Unit of the Central Valley Project embraces a major part of California's water resources. This system serves the Westlands Water District — the second largest irrigation district in California.

THE SAN LUIS UNIT AND WESTLANDS WATER DISTRICT IN PERSPECTIVE

By GERALD NORDSTROM, Field Superintendent
Spreckels Sugar Company, Mendota

THE SAN LUIS UNIT of the Central Valley Project and its major service area, Westlands Water District, comprise an outstanding portion of the development of California's water resources.

Since California is a semi-arid state, water is its life force. Water is the limiting factor in the growth of the State's cities and the productivity of its land. The State's great struggle in its fight for growth and prosperity is to find ways to use all of its available water and allow none to be wasted.

The northern half of California receives about 60 percent of the rain that falls in the state, while the southern half receives 40 percent. The present and future needs of water are just about the reverse.

The greatest area of need is the southern San Joaquin Valley. The average annual rainfall in this area is less than 10″, and agriculture is basically dependent upon ground water supplies which are gradually being depleted through increased and more intensive pumping.

California initially started action on the Central Valley's water problem in the 1920's. The basic plan then was to divert surplus water from the northern half of the valley to the southern half, thereby minimizing flood damage in the north and alleviating aridity in the south. Supplementary aims were to develop hydro-electric power, improve navigability of the Sacramento River, prevent salt water intrusion in the Delta area and furnish water to several towns and cities along the straits.

This plan was by no means new. As early as 1873 the same basic idea was put forth by a Board of Commissioners in a report on irrigation in the San Joaquin and Sacramento Valleys. In 1919 Colonel Robert B. Marshall of the Department of the Interior adopted the idea and submitted it to California's Governor William D. Stephens. The proposal which came to be known as the Marshall Plan, generated interest and in 1921 the legislature appropriated $200,000 for a scientific study of the plan which included ways and means in which to conserve and use all of the State's water resources.

Due to special interest opposition, twelve years lapsed before follow-up legislation was passed. In 1933 the Central Valley Project Act was passed which called for the construction, operation and maintenance of a system of water works designated as the Central Valley Project. A bond issue of $70,000,000 was approved by popular vote to finance the project. The State government, however, did not sell the bonds, and instead sought to have the Federal Government develop and finance the project. In 1935 funds were provided for initial construction work by the Public Works Administration (P.W.A.) In 1937 Congress officially authorized the C.V.P. as a reclamation project and designated the Federal Bureau of Reclamation to proceed with the project. Thus the C.V.P. changed from a State project to a Federal one, and by 1938 work was launched on two major dams, Shasta and Friant.

CENTRAL VALLEY PROJECT

The Central Valley Project is one of the most extensive water transport systems in the world. Once all the project plans materialize they will provide an integrated system of flood control and irrigation works for most streams emptying into the Central Valley.

Initially the project included three major storage dams: Shasta Dam north of Redding which impounds some 4½ million acre feet of water below the confluence of the Sacramento and Pit Rivers; Keswick Dam nine miles downstream from Shasta which forms a regulating after bay for Shasta; and Friant Dam on the San Joaquin River east of Fresno which stores some 520,000 acre feet of water for diversion north to Madera County and south to Kern County. The project also included four canals, the Madera, Friant-Kern, Delta-Mendota and Contra Costa Canal, and numerous hydro-electric facilities.

These initial units of the C.V.P. helped to accomplish a major portion of the task of moving some of the surplus water from the northern part of the Central Valley to deficient areas in the southern part.

Ultimate development of the C.V.P. will include more dams, canals for drainage and conveyance and power projects. Some of these have recently been completed, some are being constructed, and others are still in the offing. According to the latest Bureau of Reclamation estimates (as of June 30, 1967) $1.1 billion of the $1.9 billion authorized for C.V.P. units will have been expended.

CALIFORNIA WATER PLAN

As we have seen, the Federal Government was responsbile for the construction, financing and development of the initial major water developments in the State. In 1956, after supplementary legislation had been introduced, the State Department of Water Resources published Bulletin No. 3 — California Water Plan — describing a series of water development and transfer projects. In most cases these projects would supplement and complement the Federal projects. The projects were to be financed primarily through the issuance of $1.75 billion worth of State bonds. The act authorizing this issuance was approved by popular vote on November 8, 1960. This plan helped bring about the State's first large scale participation in its water development.

The initial plan called for the construction of 663 miles of aqueducts, 15 dams and reservoirs, 8 power plants, and 17 pumping plants. After the devastating floods in Northern California in December, 1964, the plan was expanded to include a cooperative effort by the State, the Bureau of Rec-

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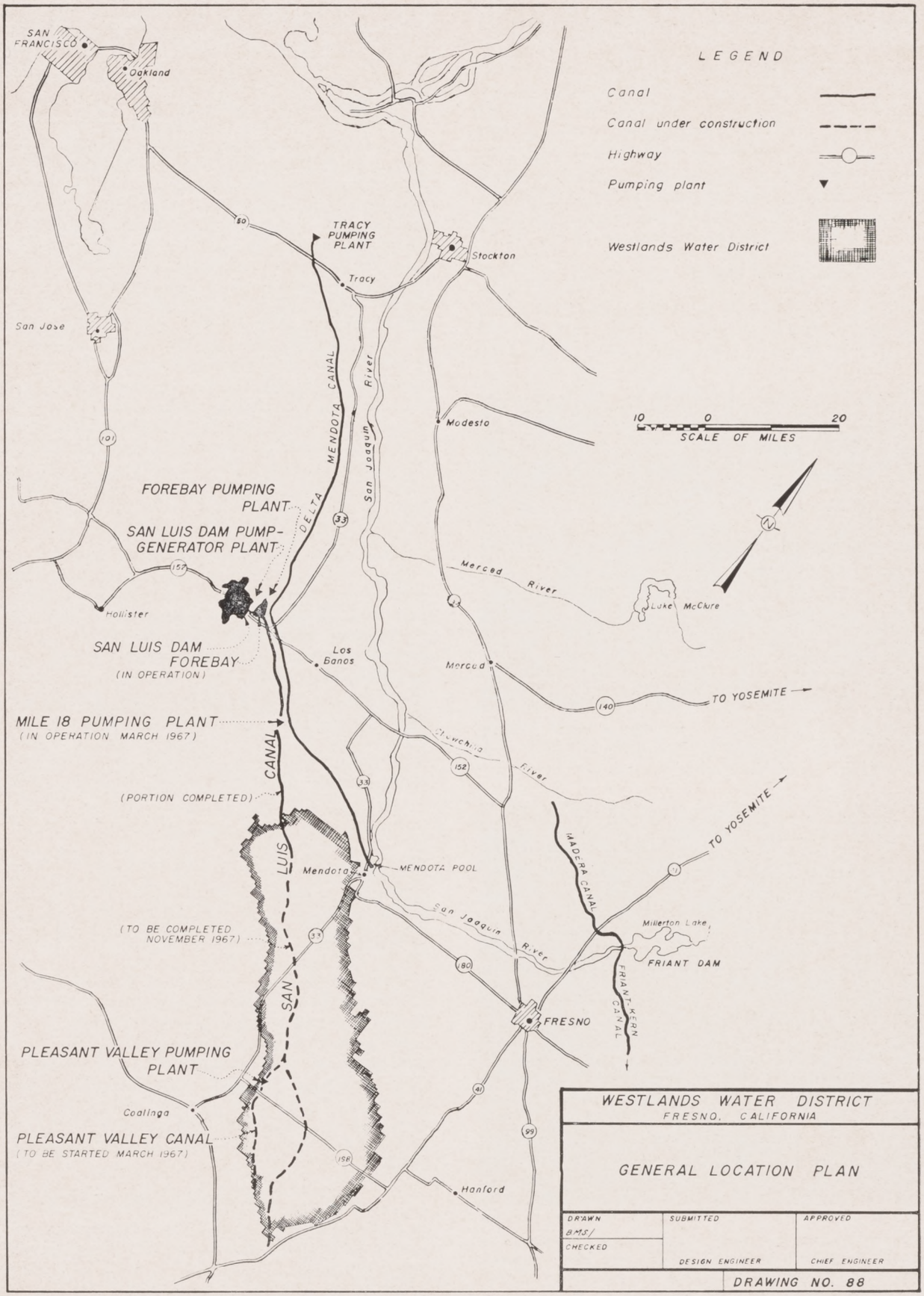


lamation, and the Corps of Engineers to provide flood control and additional water conservation facilities.

The major feature of the California Water Plan in Northern California is the Oroville Dam on the Feather River. In Southern California one of the major projects will be the extension of the San Luis Project into Southern California.

Although general obligation bonds are to be used to secure financing, the program is being executed with the intent that revenues will meet the reimbursable costs of development and operation.

SAN LUIS UNIT — C.V.P.

The San Luis Unit is a major addition to the federal government's Central Valley Project and it will also serve as a vital link in the California Water Plan. On December 30, 1961, the San Luis Agreement was signed between the State of California and the United States. It provided for the joint construction and operation of the San Luis Unit and specifically set out those parts of the unit that would be joint-use facilities. It specified that the Federal Government would design and construct the joint-use facilities and that the State would pay 55 percent of the cost for these facilities and the Federal Government 45 percent of the cost.

The joint-use facilities consist of the San Luis Forebay, San Luis Pumping-Generating Plant, San Luis Dam and Reservoir, Mile 18 Pumping Plant, San Luis Canal from San Luis to Kettleman City and necessary transmission and switch yard facilities.

The total estimated cost of the San Luis Unit is $402,106,000 (not including the San Felipe Tunnel Division). The cost of the joint-use features will be approximately $312,000,000.

Bureau of Reclamation Photo

SAN LUIS DAM, viewed from the south. Intake channel from the forebay is at the right, leading to (or from, as the case may be) the pumping-generating plant. Construction camp is in the left foreground, and relocated State Highway 152 is at the right.

According to the Bureau of Reclamation, water needed for the San Luis Unit will be taken from surplus flows in the Sacramento-San Joaquin Delta which otherwise would flow into the ocean. This water will then be pumped through the existing Delta-Mendota Canal into the San Luis Forebay, utilizing the canal's available off-season capacity. During the winter and early spring, the quantity of water entering the forebay will exceed the service area demands and the excess will be pumped into the San Luis Reservoir, stored and then released during the summer and early autumn. Releases from the reservoir will be made through the San Luis Pumping-Generating Plant utilizing its generating capability to produce power. The San Luis Canal which flows from the Forebay will convey the water south for a distance of 103 miles. Water will be distributed enroute to the Federal Service Area (mainly Westlands Water District) and up to 7,000 cubic feet per second will be conveyed to the State's California Aqueduct near Kettleman City. This aqueduct, wholly financed by the state, under auspices of the California Water Plan, will then convey water to an extensive lift system at the southern extremity of the valley which will in turn convey the water into the water-thirsty Southern California area, south of the Tehachapi.

The State will also construct a canal from the Delta area to the San Luis Forebay. This canal will run parallel to the C.V.P.'s Delta-Mendota Canal and will be the northern portion of the California Aqueduct. This water can be lifted into the San Luis Reservoir or allowed to flow on south through the San Luis Canal.

In an area northeast of Coalinga water will be lifted approximately 200 feet from the San Luis Canal into the 20 mile long Pleasant Valley Canal. This water will be used by the 70,000 acre Pleasant Valley Water District and the city of Coalinga.

The San Luis Reservoir has an active capacity of 2,020,000 acre feet of water (four times that of Millerton Lake-Friant Dam). Its maximum operating pool will cover 13,000 acres and will create a shoreline of some 65 miles. The Forebay Reservoir has a capacity of 57,500 acre feet, a maximum operating pool spanning 2000 acres and a shoreline of 14 miles.

The San Luis Canal has a capacity varying from 13,100 cubic feet per second on the north to 8,350 cubic feet per second on the south.

In terms of water delivered, the San Luis Unit will provide approximately 1,000,000 acre feet of new irrigation water for the Federal Service Area and some 45,000 acre feet for municipal and industrial uses. (This does not include water delivered to the California Aqueduct for Southern California uses).

WESTLANDS WATER DISTRICT

Westlands Water District comprises by far the major portion of the Federal Service Area of the San Luis Unit. This district contains some 600,000 gross acres. At the present some 480,000 acres are

developed, and at ultimate development there should be 540,000 irrigated acres.

Westlands will be the largest water delivery agency in the Central Valley and the second largest water organization in the State in agricultural area. (Imperial Irrigation District is the largest).

The district is located on the West Side of the San Joaquin Valley in Fresno and Kings Counties. It is bordered by the Coast Range on the west, is some 13 miles wide and 65 miles long. Average precipitation in the area is 6", most of which falls between October and April. No crops can be grown in the area without irrigation.

Westlands Water District contains one of the largest areas of prime farming land in the world. Approximately 70 percent of the District's soil is classed as 1 and 2 by the Bureau of Reclamation.

The better land lies to the west and higher elevations of the District. The poorer soils which are generally confined to the eastern half of the District have poor drainage and accumulated salts.

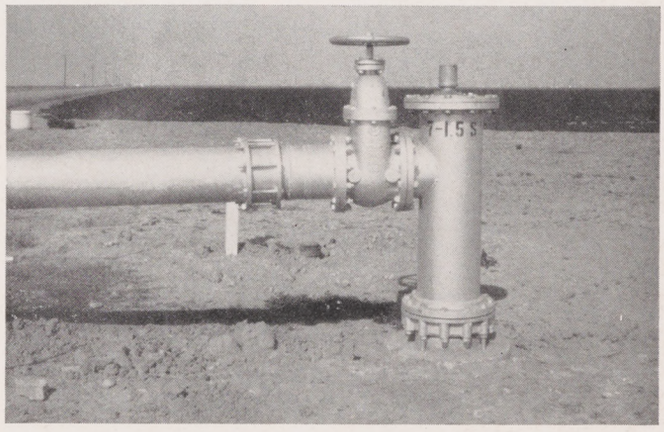
According to the Bureau of Reclamation, the supplemental water supplies to this area will increase the productivity of its fertile land. Without the water irrigation development would rely principally on ground water, but withdrawals from the ground water reservoir greatly exceed the rate of recharge. The resultant overdraft (600,000 to 700,000 acre feet annually) has caused a steady decline in the water levels in deep wells and, if unchecked, would eventually force a large part of the area to revert to dry pasture or native vegetation. Local ground water is of poor quality which severely restricts the diversity of crops raised; it is expensive because the wells are deep and have relatively short life; and it is limited in quantity which in turn limits the acreage which can be irrigated in any one year under present conditions.

COST OF WATER

On June 5, 1963, Westlands Water District executed a water supply contract with the Federal Government. Under terms of this contract and subsequent agreements, the district will take approximately all of the irrigation water made available by the San Luis Canal and will purchase the water at canalside for $7.50 per acre foot. An additional 50 cents per acre foot will also be assessed for drainage services which will be provided by the Federal Government. The total cost at canalside for Westlands will then be $8.00 per acre foot of water.

According to Westlands officials the total cost of water delivered to the farm will be about $12 to $14 per acre foot assuming an average usage of 3 acre feet per acre of land. This charge is made up of the $8.00 per acre foot charged to the District by the Bureau at canalside and an assessment which the District will make on an ad valorem basis to cover the construction, operation and maintenance of its facilities.

The District is responsible for its own distribution and drainage facilities which are estimated to cost approximately $220,000,000. The funds for construction of district facilities are provided by the Federal Government in the form of a 40 year interest-free loan. The Bureau of Reclamation is supervising the construction of the facilities which ultimately will include 1050 miles of water distribution lines (underground pipe), something in excess of 1050 miles of drainage collector lines, and numerous pumping facilities. By late 1967 the first project water should flow into some of Westlands distribution lines. It is hoped that by 1972, or thereabouts, that all of the water distribution lines will be installed and operating. The distribution facilities will provide a full pressure system with enough capacity to furnish water to the entire district. The system is designed to serve each tract of 160 acres with an individual turnout capacity of approximately 4 cubic feet per second.



MOST 160 ACRE TRACTS in the Westlands Water District will be served by a turnout which delivers 1800 gallons per minute. Water will cost users from $12.00 to $14.00 per acre foot.

When Congress approved the San Luis Act it required that a master drainage outlet and disposal channel be provided to carry farm drainage water away from the service area. The Bureau of Reclamation will construct such a drain, which will be known as the Interceptor Drain. The drain will be located on the east side of the district and will convey its water north to San Francisco Bay.

Initially it appears that approximately 100,000 acres will need drainage along the eastern half of the service area and ultimately, about 300,000 acres.

THE 160 ACRE LIMITATION

At the present the District is characterized by large scale land holdings and farm operations. Data on ownerships compiled by Westlands Water District showed that 77 percent of the ownerships are units of 160 acres or less and that these units comprise only 15 percent of the gross acreage. Conversely, 85 percent of the area is controlled by 23 percent of the ownerships having land holdings in excess of 160 acres.

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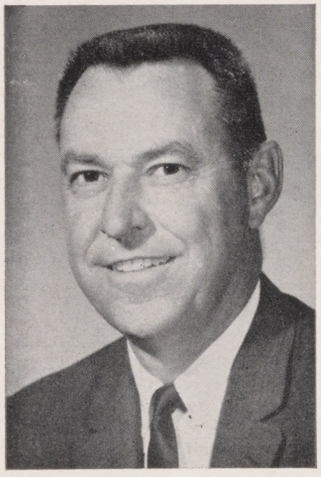
A REVIEW OF THE 1966 CROP

BY J. M. KENDRICK
Agricultural Manager,
Spreckels Sugar Company



AS THIS IS BEING WRITTEN, the 1966 crop is still some distance from becoming a final entry in the record books and with the 1967 "spring campaign" not yet at the half-way mark, it is a bit premature for a crop preview. However, certain statistics are evident and others far enough along to permit predictions with a reasonable degree of accuracy. One conclusion that can be drawn with little concern is that there have been better crops and better years in the beet sugar industry. Most discouraging, of course, were the substantially below-normal yields experienced in sections of the southern San Joaquin Valley. On the other hand, the overall prospects were brightened by better than average crops in the north San Joaquin and Sacramento Valleys and improved sugar prices.

Once again - due to the variable nature of the 1966 crop - each area will be reviewed separately. On the whole, Spreckels growers' 1966 crop yield will be over a ton to the acre below the 1965 crop, but nearly a half percentage point of sugar better.

DISTRICT I — COASTAL DISTRICT

The coastal area, where harvest was essentially completed last fall, recovered from the disasterous crop of 1965 and produced an "average" crop yielding approximately 25 tons per acre and over 14.5% sucrose. The Honor Roll for District I which appears in this issue of the Bulletin is evidence of the large number of growers whose per-acre yields exceeded the 25-ton level.

As is normally the case in this area, sugar content was at its highest at the beginning of harvest and gradually declined as the season progressed. At a point two weeks after harvest began the sugar percentage averaged 15.4%.

In contrast, all harvest after October 15 averaged 14.3%. Although a slight increase in tonnage may have been produced, the overall effect of the declining sugar content reduced the sugar-per-acre yields from 7,450 pounds on September 10 to the final outcome of 7,200 pounds at harvest termination. This pattern of decline in quality during the harvest season has been recognized for years, but few growers chose to capitalize on this higher quality normally in evidence during early fall. There appears to be ample evidence that many District I growers could maximize their profits by capitalizing on the better sugar content present during the early part of the harvest season.

DISTRICT II — NORTH SAN JOAQUIN

As this review is being prepared for printing, District II is approximately 60% harvested and promises to out-yield all recent crops with the exception of the outstanding 1964 crop. By mid-May average yields are at 21.5 tons per acre, already in excess of last year's final yield by ¾ ton per acre, with prospects of achieving close to 22 tons per acre upon completion of harvest. Of equal significance, however, is the 15.2 sugar percentage which is the highest testing crop in recent years for a comparable date. From the beginning of harvest in September, a consistent upward trend in sugar content and beet purity was experienced. A slight reduction in sugar content might be expected as spring harvest draws to an end, but it is hoped the crop will remain above the 15% mark.

Once again, it is most likely that the highest quality beets will be harvested during the spring, despite the unusually late start. In recognition of high performance, it should be noted that the Sheldon area of District II produced a 22.2-ton yield which is over two tons above its five-year average.

With respect to sugar production, the 1966 crop will probably rank second only to the 1964 crop which averaged almost 6,800 pounds of sugar per acre, the highest average since the record-breaking 1959 crop production of 7,800 pounds per acre.

DISTRICT III — SACRAMENTO VALLEY

The Sacramento Valley growers enjoyed a near perfect fall harvest as restrictive quotas were never placed on beet deliveries. By early October, rail shipment of beets to the Salinas Valley factory provided the opportunity for an early fall clean-out of beet-free areas and most other fields designated for fall harvest. Despite the early November rains and premature termination of the fall campaign, District III harvested over one-third of its acreage, the highest fraction since 1962.

At the termination of the fall campaign, the Sacramento Valley area had averaged over 20 tons per acre on the acreage harvested. With the spring campaign this yield continues to improve and there is little doubt that the overwintered acreage benefitted by the favorable winter growth conditions.

Current estimates forecast a final yield between 21.5 and 22.0. Sucrose content is expected to be near that of the last two years, which averaged 15.2% and 15.0%, respectively.

Particularly bright spots in District III were the early harvest area of Josephine and Libfarm, which yielded 20.4 and 27.0 tons per acre and 16.0% and 15.4% sugar, respectively, at the end of the fall harvest period. Unfortunately, the spring weather pattern has prevented plantings in these areas. Acreage prospects for 1967 will reflect this situation.

Historically, the 1966 crop in District III will probably rank just below the 1962 and 1964 crops in yield and close to the 1965 crop in sucrose con-

tent. Sugar production will average about 6,300 pounds per acre, certainly well above the previous five-year average of 5,800 pounds.

DISTRICT IV — SOUTH SAN JOAQUIN

Normally, the best should be saved for the last, but in this instance the nomenclature of the district organization dictates the order. Accordingly, the comments on this area deal with the major problems experienced by beet growers during 1966.

Curly top, the virus disease which once threatened extinction of the United States beet sugar industry but not considered a serious menace in recent years, once again demonstrated its destructive powers in parts of the southern San Joaquin Valley. Fresno County and the west side of Kings County were hardest hit by the disease where yields above 10 tons per acre were the exception. Several factors are noted as compounding the effects of curly top, the least of which was the sustained hot spell in midsummer. Lack of spring rainfall forced an early and exceptionally heavy migration of virus-carrying beet leafhoppers from the foothills. These insects fell ravenously upon the small beets which had been planted later than usual to escape virus yellows. The combination of these circumstances produced an extremely favorable environment for the virus and an extremely unfavorable one for beets.

Kern County also produced a somewhat below average crop, but for reasons not mainly attributable to disease. Late planting, heavy replanting and light stands are listed as the factors responsible. On the plus side was the welcome improvement in beet quality. The general acceptance and employment of the fertilizer strip technique clearly demonstrated its value as an indicator tool in predicting applied nitrogen fertilizer requirements. Through visual observation and judicious nitrogen applications, sugar production and profits are maximized.

The general acceptance by growers of this method is evidenced by the great number of fertilizer check strips found in their 1967 crop fields.

It is of interest in passing that leafhopper populations have been watched very closely this past year and it is a reasonable prediction that the probability of a recurrence of serious curly top in 1967 crop beets is low. Additional comments on this problem are covered by Mr. Dieter on page 19.

The net result of the South San Joaquin's afflictions is an average yield of 15 tons per acre. This low yield generated the lowest sugar producing crop in the past five years, despite the highest sucrose content since the 1962 crop.

In summary, Spreckels' growers will produce, in 1966, less sugar per acre on the average than in any year of the last five. This reduction is due entirely to the low production in the San Joaquin. Fortunately, the prospects for the 1967 crop are generally better. With an improved contract, improved sugar prices and no Federal restrictions, we can look forward to substantially improved returns for our growers.

1967 CROP OUTLOOK -- DISTRICT 4

By DAN L. DIETER, District Manager
Spreckels Sugar Company, Mendota

THE LAST TWO YEARS have been years of contrast in the production of sugar beets in the South San Joaquin Valley. Most growers are aware of the problems which occurred in 1966 and it is best that these problems be filed in the realm of memories and experience.

The growing season of 1967 presents a picture that is in direct contrast to that of 1966. Early rains helped establish good stands of beets, especially in the alkaline soils which are present in much of this district.

Intermittent spring rains in the foothills have been favorable to host plant growth and have thus delayed the annual migration of beet leafhoppers into the Valley floor. This condition plus an active spray program in the foothills conducted by the Bureau of Entomology of the California Department of Agriculture has greatly reduced the chance of curly top being a factor this year.

Aphid populations have built up during April, but they are not expected to be a problem because all beets south of Firebaugh were harvested last fall. This clean-out established a beet-free period for the entire southern portion of the district and should practically eliminate the threat of virus yellows to this year's crop.

The spring rains, although detrimental to many of the other crops in the area, have been beneficial to the 1967 beet crop. The crop's development is excellent at this time, and barring any unforeseen difficulties, the sugar beet producer in the South San Joaquin Valley should look forward to a favorable production year.

The climatic and crop production conditions which have occurred this spring point up the economic importance of a proper crop rotation and diversification program. These conditions are seldom identical in any two years and the production of several crops to spread the risks caused by these conditions is an old established axiom in the records of successful farming. This is certainly a year that points out the importance of this axiom, and one in which many growers will wish they had included more beets in their cropping program.

Looking into the future presents a picture that not only includes improvement in the price outlook

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for sugar and consequently sugar beets, but also improvements in production techniques which will have far-reaching effects. The Spreckels Sugar Company Agricultural Research Staff in cooperation with the Agricultural Extension Service has carried on an extensive program evaluating many chemical herbicides and insecticides which are now available. These tests have included the use of pre-emergence as well as early post-emergence applications. The results show promise of a most important breakthrough in chemical weed and disease control.

Looking ahead, the District 4 grower who has included sugar beets in his cropping program has every reason to expect a successful and profitable future.

GROWERS ASSOCIATION HOLDS SUGAR BEET EQUIPMENT FAIR

DISTRICT NO. 2, California Beet Growers Association was host to some 300 people who attended the Association-sponsored exhibition of sugar beet field machinery on March 8, 1967.

The Stockton fairgrounds exhibition building was well filled with displays of the latest machinery.

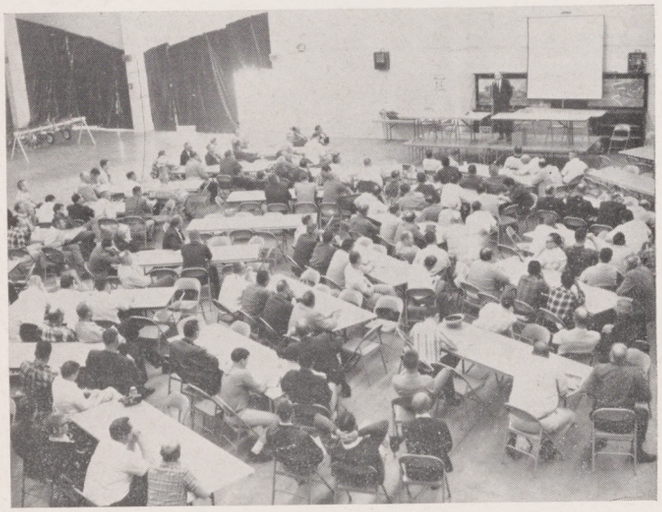
District 2 of CBGA, Ltd. provided a fine lunch, which was followed by a series of illustrated talks by sugar beet experts. The afternoon program follows:

How Do I Get a Stand?

F. J. Hills, Extension Agronomist, University of California at Davis.

How Do I Manage Fertilizer?

Lauren Burtch, Chief Agronomist, Spreckels Sugar Company.



LAUREN BURTCH, Spreckels Chief Agronomist, addressed some of the 300 interested guests of CBGA at the Stockton meeting on March 8.

How Do I Control Sugar Beet Nematodes?

Franz R. Kegel, Farm Advisor San Joaquin County.

How Do I Control Weeds?

Ned Frandeen, Amchem Products, Inc.
W. T. Thomson, Elanco Products Company

How Do I Improve My Own Operation?

A panel discussion:
Franz R. Kegel, Moderator; Joe Fiack, Tracy; Eldon Everett, Tracy; Merlin Miller, Escalon; and George Lagorio, Stockton.

Previous speakers were called on to answer questions.

When 300 beet growers, processor representatives and equipment men get together, there is an opportunity for a good deal of informal interchange of ideas. Out of such discussions, two facts emerged. First, total mechanization, including maximum use of chemical aids, is essential to profitable sugar beet production. Second, the cost of this mechanization threatens to become excessive if the trend toward heavier and more elaborate equipment persists.

This reporter feels that future successful sugar beet field machinery should benefit the beet grower more and the iron and steel industry less.

ARIZONA FACTORY DEDICATED; CAMPAIGN STARTED ON MAY 10

AN IMPRESSIVE PUBLIC CEREMONY marked the formal dedication of Spreckels Factory 5 at Chandler, Arizona on April 8. An estimated audience of 500 attended the formal dedication. Principal speakers were Arizona Governor Jack R. Williams, Spreckels President Guy D. Manuel, and Floyd N. Smith, Chairman, Arizona Sugar Beet Committee.

Following the ceremony, the factory was host to a public open house tour, Saturday and Sunday afternoons, April 8 and 9. Attendance at this event was remarkable — well over 35,000 people enjoyed the factory tour, after viewing a continuous showing of a specially produced sound movie showing how beet sugar is made.

May 10 marked the start of the factory's first campaign. On this date, Arizona-grown sugar beets were sliced, initiating a daily processing rate which will reach 4,000 tons of beets, yielding about a million pounds of sugar daily, for an estimated 1967 season of 60 days.

Late in the fall, the factory will receive later maturing beets from South-Eastern Arizona's "high country" (Cochise and Graham Counties).

Spreckels Sugar Company would like to claim its 1967 campaign at Chandler to be Arizona's first. But history records the building of a beet sugar factory (800 tons per day) at Glendale, Arizona, in 1905. This plant sliced locally grown beets until 1913, and operated briefly during two more years, using cane instead of beets. In 1920 its machinery was moved to Delta, Colorado.

NITROGEN IN WELL WATER

By J. G. MAURER
Agricultural Superintendent
Spreckels Sugar Company, Bakersfield

RECENT HYDROLOGIC DATA developed by the California Department of Water Resources indicates the presence of nitrates in many of California's irrigation wells. The Department has sampled many wells throughout the State on a regular basis to determine changes in water quality and water levels.

In a few extreme cases, wells sampled in some of our sugar beet growing areas contained as high as 200 p.p.m. (parts per million) of nitrates.

University of California Agricultural Extension Service researchers have developed a simple method to express nitrates in terms of usable nitrogen. To get the pounds of nitrate nitrogen in one acre foot of water multiply nitrates in p.p.m. times 0.616. Example: If your well water samples indicate an average nitrate content of 50 p.p.m. and you use 3 acre feet of water to grow your crop of sugar beets, you have applied approximately 90 lbs. of nitrate nitrogen per acre. It should be noted that this method has great restrictions though, and is nothing more than an approximation.

As we well know, a high level of nitrogen in our beets at harvest time has a negative effect on sugar content. Consequently, prudent management of nitrogen can be a major factor in improving sugar beet quality and in realizing greater crop returns. Since nitrate nitrogen contained in irrigation water moves easily through the soil and is readily available to the sugar beet plant, it is definitely a factor to be reckoned with in the growers' nitrogen management program.

A simple test is available through your Spreckels Field Superintendent to determine the presence of nitrate nitrogen in your water. This test is similar to the field method for determining the presence of nitrate nitrogen in beet petioles. A sample is merely extracted from the well and treated with diphenylamine reagent. If nitrogen is present, the solution changes to a blue color. The amount of time in which this change occurs and the shade of blue to which it turns will indicate the approximate concentration of nitrate nitrogen in the water sample. If the presence of nitrate nitrogen is indicated by this test, it is advisable that you have your well water analyzed by a commercial laboratory.

SUGAR BEET VIRUS EXPERT FROM ENGLAND TO MAKE CALIFORNIA STUDY

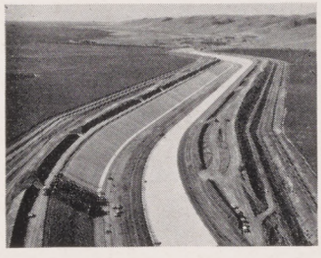
DR. RAYMOND HULL, internationally recognized expert on sugar beet diseases, arrived in Davis on March 11. He will spend six months as visiting plant pathologist with the Plant Pathology Department of the University of California. He will cooperate with department chairman, Dr. Lysle Leach, on studies relating to beet virus diseases in California.

Dr. Hull is Head of Broom's Barn Experiment Station at Barrow, England. His work in controlling virus diseases of sugar beets in England has extended over two decades, and is credited with reducing England's losses due to virus yellows from near-disastrous to minimal.

Recognition for Dr. Hull's successful efforts came in 1961, when Her Majesty Queen Elizabeth presented him with the Royal Agricultural Society's Research Medal.

In August, 1951, Dr. Hull visited California and inspected sugar beet fields in the Sacramento and Salinas Valleys. At that time he expressed the firm conviction that the Sugar Beet Yellows Virus was present in California. He confirmed this conviction the following year, when Dr. Leach sent him yellow beet leaves from California fields. Dr. Hull was able to transmit the virus by aphids, and also identified it by a serological technique which he developed.

DR. RAYMOND HULL (right) discusses virus symptoms with Spreckels Plant Physiologist Varon Jensen.



COVER COMMENT — This official photo by the Bureau of Reclamation shows the nearly completed San Luis canal as it approaches Mile 18 pumping plant.

The 1966 Honor Roll

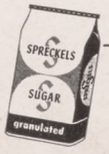
We proudly publish the names of growers whose 1966 crops exceeded 25 tons per acre in the Spreckels and Mendota districts. The Fall issue of the Bulletin will list growers in the Manteca and Woodland districts who have earned a place on the Honor Roll.

DISTRICT I — SPRECKELS

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
E. E. & M. F. Nutting	15	43.11	12,674
Merit Packing Co.	13	35.56	12,290
Owen T. Rice & Son	52	38.49	11,986
Arthur F. Blomquist	59	36.84	11,509
Schween Bros.	57	40.23	11,490
Franscioni & Griva, Inc.	51	38.05	11,369
Herold Ranches	20	35.71	11,177
Pete Violini	9	36.03	11,097
Pete Violini	9	34.61	11,048
Raymond Martin	96	37.55	10,995
Henry Signorotti	8	37.00	10,826
L. & J. Farms	19	39.46	10,796
Herold Ranches	51	37.13	10,716
Isao Ogawa	36	36.94	10,513
Herold Ranches	39	35.59	10,499
Lincoln & Ben Handley	26	32.83	10,414
J. J. & H. Violini	18	31.28	10,310
Robert Thorp	9	34.14	10,222
Henry Signorotti	14	35.10	10,200
B. E. Johnson	10	32.08	10,176
Ray Rianda	29	32.05	10,173
B. E. Johnson	14	32.12	10,092
Herold Ranches	18	35.40	10,082
B. J. Marks Family	141	31.89	10,045
Silveria Bros.	15	36.19	9,996
California Orchard Co.	70	32.13	9,941
Albert C. Hansen, Jr.	30	35.60	9,925
A. J. Glau & Son	40	32.22	9,917
Robert Heess	31	33.03	9,916
John O. Andersen	19	31.46	9,910
Tom Hambey & Son	34	35.18	9,836
Manuel Baliel	70	28.19	9,788
Harless Bros.	29	31.90	9,749
Henry E. Corda	22	29.95	9,722
Hansen & Fowler	156	31.48	9,718
Yamoaka Bros.	12	34.79	9,699
Sidney Gandrup	35	31.04	9,635
Wiley Farms, Inc.	10	31.20	9,610
R. B. Little	100	28.09	9,556
James H. Watson	11	30.48	9,540
J. M. Thorne	14	35.82	9,392
John O. Andersen	28	30.18	9,380
F. J. Martin	16	30.94	9,375
Jim Fanoe & Son	136	32.08	9,361
Newhall Land & Farming Co.	78	27.00	9,396
Herold Ranches	27	31.87	9,325
John Oreggia & Co.	30	30.77	9,243
Huntington Farms	25	29.29	9,232
Turri Bros.	33	32.12	9,199
Walter W. Herbert	28	29.15	9,206
Pete Fanucchi	23	34.86	9,189
Wiley Farms, Inc.	37	31.21	9,113
Bruce Church, Inc.	16	30.47	9,098
Lee F. Smith	14	33.04	9,093
Albert C. Hansen, Jr.	80	31.76	9,077
Breschini Co.	18	28.99	9,062
H. & C. Overfelt	41	31.91	9,031
Ken Hutchings	10	29.82	9,029
William Whitney	24	30.28	8,951
Tony F. Silveira, Jr.	39	27.55	8,943
Growers Produce Dispatch	20	31.22	8,941
Major Farms, Inc.	84	27.53	8,936
Twisselman & Roper	94	30.33	8,881
M. G. Da Rosa	30	30.15	8,810
Peter A. Stolich Co., Inc.	43	32.84	8,808
W. & S. Packing Co.	47	30.03	8,805
Gill Bros.	41	32.81	8,767
W. W. Johnson & Son	99	31.22	8,754
Frank Wyrick	24	30.89	8,637
Salaberry & Guidici	34	26.33	8,626
Mortensen Bros.	59	26.74	8,626
F. J. Martin	23	32.13	8,592
Herold Ranches	27	26.39	8,571
Schween Bros.	37	28.32	8,530
J. B. S. Abeloe & Sons, Inc.	28	27.49	8,505
A. Bassetti & Sons	48	28.38	8,497
Edward A. Johnsen	10	29.33	8,435
Jim Fanoe & Son	22	26.59	8,434
W. W. Johnson & Son	15	26.74	8,434
Toro Farms	131	31.21	8,414
Bengard & Sconberg	73	27.10	8,401
C. L. & A. W. Johnson	59	27.63	8,383
J. C. Nation & Son	29	28.78	8,340
Roy Uyeno	44	28.02	8,187
Casillas Bros.	40	28.13	8,186
W. M. Christensen	21	27.26	8,123
John Gardoni	34	28.02	8,081
J. E. Blair	10	31.82	8,063
Martella & Buzzini	33	27.72	8,044
Herold Ranches	22	28.36	8,043
Yamanishi Farms	19	27.86	8,040
Growers Produce Dispatch	27	27.42	8,012
E. J. Foletta & Son	15	30.49	7,982
Owen T. Rice & Son	93	26.16	7,958
Fabretti & Dedini	13	31.13	7,919
Latasa Bros.	88	27.16	7,909
Elmer Johnsen	71	26.79	7,855
E. John Nielsen Co.	47	25.70	7,839
West Coast Farms	136	26.97	7,811
Robert A. Smith	46	30.06	7,792
Clark & Romans	93	26.62	7,778
Herold Ranches	45	26.53	7,715
Jack A. Hayes	42	25.73	7,693
James M. Johnsen	23	30.39	7,689
Botelho Bros.	37	27.28	7,688
Merit Packing Co.	24	31.49	7,684
Chas. Gianolini	29	28.32	7,669
Peter A. Stolich Co., Inc.	16	30.17	7,651
Peter A. Stolich Co., Inc.	76	29.86	7,626
William D. Crinklaw	47	27.46	7,623
John & Bob Corda, Jr.	17	27.12	7,604
L. & J. Farms	14	25.63	7,525
Embrey & McKinley	34	25.71	7,451
T. O. Tomasello Co.	14	25.30	7,383
J. A. Ferrasci	22	30.39	7,439
W. M. Sullivan	42	26.57	7,355
Darrigo Bros. Co. of Calif.	22	25.22	7,248
Michael K. Reed	28	26.16	7,215
Obata Bros.	34	25.67	7,152
Francis H. Rianda	19	26.27	7,056
William D. Crinklaw	31	31.41	6,935
Ernest R. Binsacca	13	26.60	6,911
Albert C. Hansen, Jr.	59	29.24	6,877
Joe P. Alves	38	26.93	6,786
Spreckels Sugar Co.	34	25.99	6,549
William D. Crinklaw	74	28.07	6,372
Bruce Chruch, Inc.	15	27.84	4,020

DISTRICT IV — MENDOTA

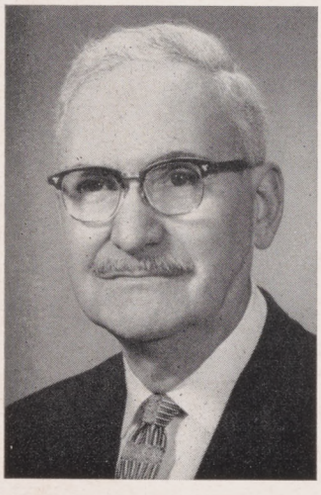
Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Emory O'Banion	27	27.59	9,921
Christiana & Skaggs	198	31.91	9,835
Emory O'Banion	14	28.31	9,161
Barnard Bros.	40	33.91	8,918
Joe G. Machado	41	27.64	8,900
Ralph Terry	49	34.95	8,842
Arthur J. Cuelho	17	30.03	8,841
Bonanza Farms	79	27.85	8,778
Arthur J. Cuelho	180	30.09	8,515
David R. Vierra	1	36.91	8,415
Roy Henson & Sons	82	32.43	8,322
W. M. & D. L. Colson	85	32.96	8,187
Dick Anderson	42	32.60	8,143
John Guthrie	35	32.28	8,115
C. E. Luker	38	35.41	7,748
Manuel Garcia	16	34.31	7,740
Herman & O. L. Walls	78	28.01	7,636
Floyd Hudiburg	74	29.31	7,550
Sanders & Sanders	153	27.71	7,426
Albert J. & Kenneth Perry	17	25.89	7,405
Etchegoinberry Ranch	15	27.87	7,358
Clarence Ritchie	71	25.68	7,350
Clarklind Farms	62	26.66	7,326
Richard Hohlbauch	58	25.70	7,247
Paul W. Demkey	36	26.69	7,228
Antongiovanni Bros.	67	28.24	7,224
John Mederos	34	25.68	7,190
Double L. Farms	76	26.94	7,188
W. L. Simmons	65	28.05	7,164



Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
W. M. & D. L. Colson	15	28.07	7,046
W. R. Greenlee Farming	77	27.74	7,035
Hugh S. Jewett	30	25.16	7,025
Double L Farms	157	26.50	7,023
Floyd Hudiburg	76	26.64	7,012
Sanders & Sanders	83	25.38	7,000
Crettol Farms	39	28.26	6,992
Hill Ranches	22	26.46	6,954
Fredlo Farms	39	35.19	6,946
R. A. Rowan & Co.	99	26.14	6,896
S. P. Vastbinder	38	28.53	6,893
Cerro Bros.	76	25.24	6,850
Dick Anderson	37	27.24	6,843
Euel Bevers & Son	45	25.08	6,822
G. P. Orisio	42	26.00	6,817
Kern County Land Co.	35	27.43	6,797
Deerwood Stock Farm	115	26.02	6,786
Crettol Farms	75	25.55	6,704
J. G. Boswell Co.	241	26.31	6,651
Barnard Bros.	50	25.60	6,605
Kern County Land Co.	61	25.16	6,577
David Noel	19	25.91	6,545
Severin Sandrini & Wahl	34	26.32	6,527
Merz Farms, Inc.	77	25.44	6,502
Lester Terry	30	25.58	6,426
E. O. Mitchell, Inc.	40	28.81	6,419
Lone Palm Farms	42	25.59	6,382
G. P. Orisio	18	26.12	6,305
Stanley Hefner	19	25.23	6,292
Stanley Hefner	21	25.91	6,270
Kenmar Farm	91	26.54	6,253
Roy Henson & Sons	72	25.16	6,235
Antongiovanni Bros.	35	27.21	6,008
J. Howard Porter	36	25.13	5,976
C. E. Luker	62	25.23	5,954

BULLETIN EDITOR AUSTIN ARMER SUCCEEDED BY GERALD NORDSTROM

JUNE 30 MARKS THE retirement date for Austin Armer, editor of the Spreckels Sugar Beet Bulletin since 1947, as well as agricultural engineer for Spreckels Sugar Company.



Mr. Armer joined the Spreckels Agricultural Department in 1943 at the behest of J. Earl Coke, then General Agriculturist. The immediate assignment was to mechanize the harvest of sugar beets, a program made necessary by war-caused field labor shortages. As harvest mechanization became general, his efforts were directed to beet seed processing, to mechanical thinning, and to improving the design of beet receiving facilities. Three patents relating to beet receiving and sampling mechanisms have been granted Mr. Armer and assigned to Spreckels Sugar Company.

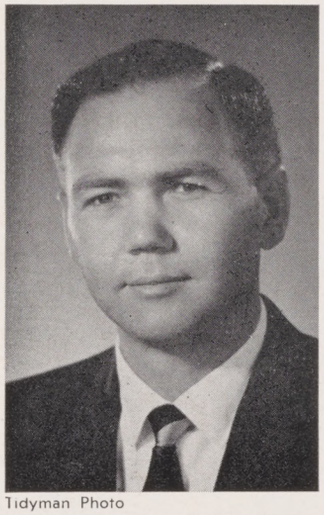
In 1951, Mr. Armer spent three months in Ireland as a technical consultant under the Marshall Plan. There he developed the sugar beet harvester which bears his name, and which has since been modified for the harvest of carrots.

In 1956, he was elected to the presidency of the American Society of Sugar Beet Technologists, and in 1964 was presented with the Society's Meritorious Service Award for his contributions to the beet sugar industry.

Mr. Armer's photographic talents not only supplied the Bulletin with abundant illustrations, but also took the form of sound motion pictures. He has produced six films for Spreckels Sugar Company relating to sugar and sugar beet production.

GERALD NORDSTROM WILL BE BULLETIN EDITOR

The duties of Editor of the Spreckels Sugar Beet Bulletin will be taken over by Gerald Nordstrom, presently Field Superintendent at the Mendota factory of Spreckels Sugar Company.



Tidyman Photo

Mr. Nordstrom is a native of Dos Palos, California, and a graduate of the University of California at Berkeley where he majored in Agricultural Economics. He was affiliated with the big "C" Society and the Phi Kappa Tau Fraternity while at Berkeley. He has been associated with Spreckels Sugar Company since 1962. He started as an Assistant Field Superintendent in Woodland where he worked with the Agricultural Research and field staffs. In 1963 he was transferred to Mendota as a field superintendent. His district encompassed the Madera, Firebaugh, Mendota and Tranquillity areas.

Mr. Nordstrom will continue to function as a Field Superintendent in the immediate Mendota area in addition to his new responsibility as Editor of the Sugar Beet Bulletin.

He is currently a member of the Agri-Business Committee of the Fresno City and County Chamber of Commerce, The American Society of Sugar Beet Technologists, and the Commonwealth Club of California.

Mr. and Mrs. Nordstrom and their two daughters reside in Fresno, California.

SAN LUIS UNIT

Continued from Page 17

In 1960 there were 124 individual land holdings in the so-called excess category (more than 160 acres). These ownerships totaled 136,771 acres or 22 percent of the proposed service area. In addition, 63 corporations held 309,322 acres, or 51 percent of the proposed service area, in the excess category.

The 160 acre limitation as established in the Reclamation Act of 1902 will apply to the Federal Service Area and will affect about 400,000 acres or 64 percent of the total area. Before water can be delivered to a parcel of such excess land, the owner must sign a recordable contract with the Federal Government. These contracts state that the landowner must agree to sell his excess lands within ten years at an appraised price which will exclude any incremental values resulting from the project water. If the excess landowner does not sell his land at the end of the 10 year period, the Secretary of the Interior is then given power of attorney to sell the land.

A great deal of speculation exists as to the effect the 160 acre limitation will have on farm operations in the area. The government would like to see 2000 to 3000 people buy the excess land in units of 160 acres or smaller and operate their land as new farm units. Whether or not this will be practical remains to be seen. This may occur in some instances, but a large percentage of the new land holdings will probably be absentee with the land leased out to existing operators in the area.

FUTURE PRODUCTIVITY

Crops now being grown in the Westlands Water District include cotton, grains, safflower, alfalfa hay, alfalfa seed, cantaloupes, tomatoes, rice, sugar beets, and some truck crops.

Estimates of what the ultimate crop pattern and its gross value will be have been made by many sources. Westlands Water District estimates that by using basically the crops grown in the area now, an annual gross return of $222 million will be realized.

The $222 million projection arrived at by Westlands is about $150 million, or two-thirds, more than what this area now contributes to the local counties' farm incomes.

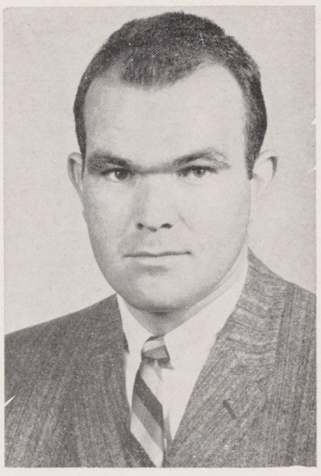
The San Luis Unit and Westlands Water District comprise but one chapter in the book of California's water development; a chapter which should bring forth a new farm era to the west side of the San Joaquin Valley. An era which should see new heights of farm development and crop diversification not attainable in the past due to the economic and technical restrictions imposed by deep well irrigation.

SPRECKELS SUGAR BEET BULLETIN is issued quarterly by the Agricultural Department of Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.

GERALD NORDSTROM, EDITOR

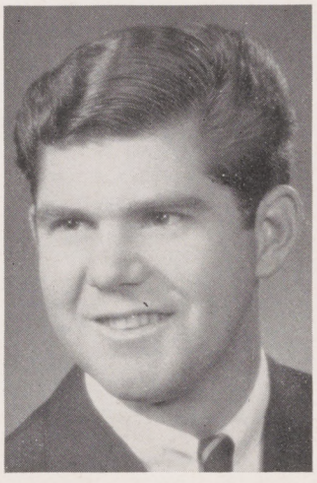
SPRECKELS SUGAR COMPANY MENDOTA, CALIFORNIA

AGRICULTURAL STAFF CHANGES



DAN BANTA, Field Superintendent in the Mendota District, has been transferred to the Salinas District. He will take over the responsibilities as field superintendent in the King City and Guadalupe areas.

Mr. Banta is a graduate of Chico State College where he majored in Agriculture. He was employed by Spreckels Sugar Company in 1960 and assigned to the Manteca District as an Assistant Field Superintendent. In 1962 he was transferred to the Mendota District as Field Superintendent for the Burrel and Helm areas. Mr. and Mrs. Banta and their two children now reside in King City.

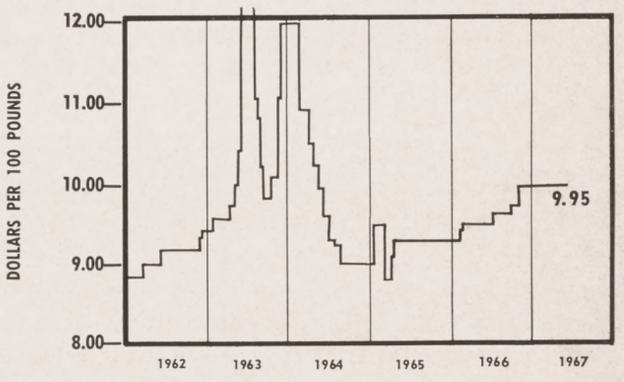


RICHARD HEIMFORTH will replace Dan Banta in the Burrel and Helm areas. Mr. Heimforth has been associated with the Company since the fall of 1965. He started as an Assistant Field Superintendent in the Mendota District.

Mr. Heimforth is a native of Bakersfield and a graduate of Fresno State College where he majored in Farm Management. Prior to his employment with Spreckels Sugar Company, he was employed by a large farming concern in the Porterville area. He is currently a member of the Coast Guard Reserve and resides in Fresno.

QUOTED PRICE OF BEET GRANULATED SUGAR

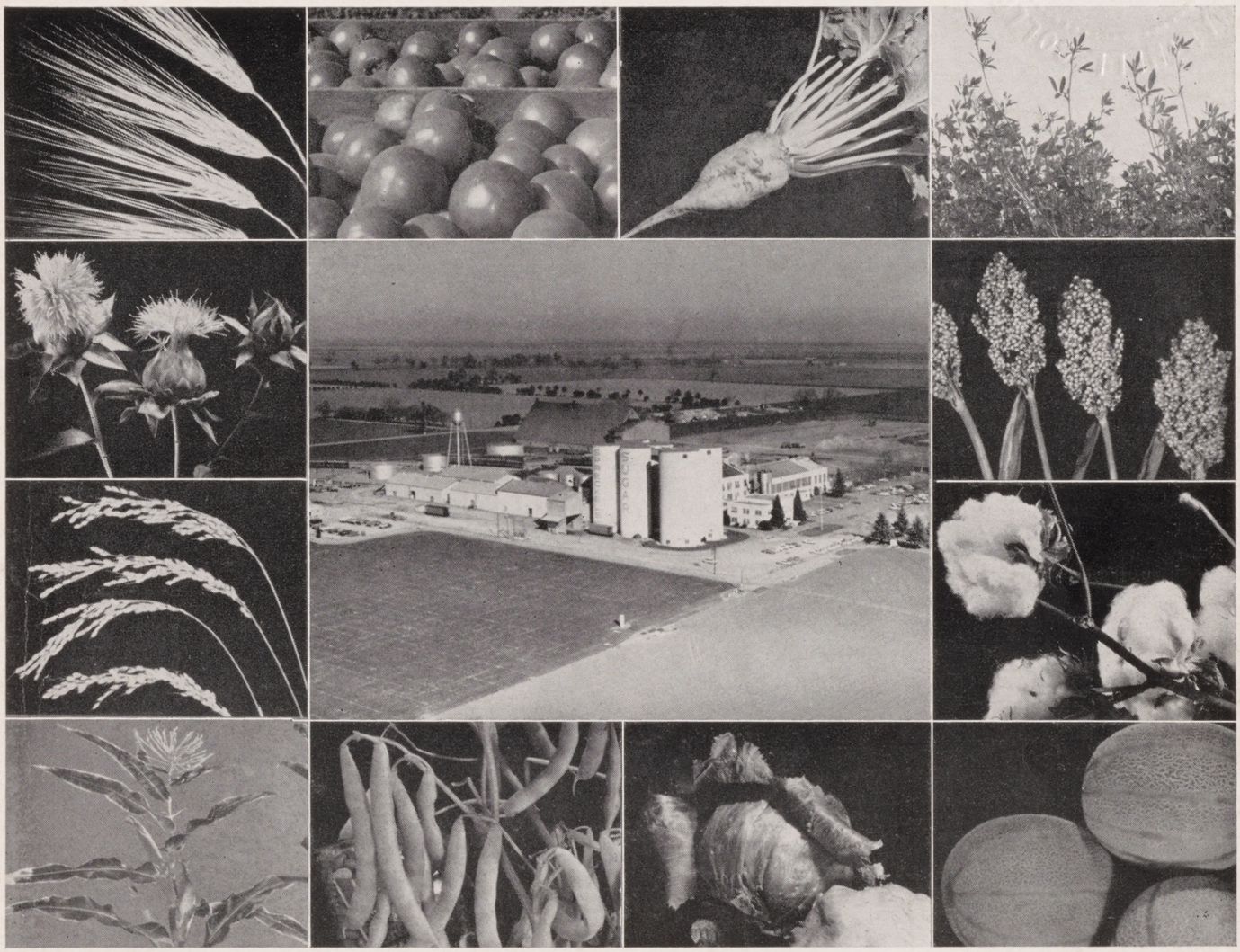
In 100 Lb. Paper Bags, F.O.B. Factory



PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 31 FALL, 1967 NO. 3



CROP DIVERSIFICATION

One means to effectively stabilize overall net farm income. The major principles a farm manager should bear in mind in developing a diversified cropping system are outlined herein.

NEW DEVELOPMENTS IN CHEMICAL WEED CONTROL FOR FALL AND WINTER PLANTED BEETS — Pg. 28

CROP DIVERSIFICATION PRINCIPLES

By DR. GERALD W. DEAN*

YEAR TO YEAR variation in yields can lead to large fluctuations in the net income received for any given crop. These fluctuations may be compounded even further by variations in prices received for that crop. Diversification is one means that may effectively reduce the variability in overall net farm income. The major principles a farm manager should bear in mind in developing a diversified cropping system are discussed below.

SPECIALIZATION VERSUS DIVERSIFICATION

The term diversification implies a combination of several crop enterprises, often with the purpose of reducing risk. The opposite extreme from diversification is complete specialization in one crop. Complete specialization is extremely rare in California agriculture, except in certain orchard crops such as citrus, peaches, or tree nuts. Even here, the grower often produces several varieties in order to spread out harvest requirements and marketing dates. Complete specialization in sugar beets is, of course, out of the question unless a grower moves his entire operation to clean, rented land each year. Therefore, most growers are forced to grow at least one other crop along with sugar beets. The question is: Which crop or crops should be selected to round out the cropping system?

The answer to this question will vary from area to area depending on the available crop alternatives, and from farmer to farmer depending on his resources, financial position, and basic attitude toward taking risks. No matter what the situation, a number of key factors should be considered. They are outlined below.

DIVERSIFICATION TO MAXIMIZE NET INCOME

As a starting point, suppose that risk were not a factor. That is, suppose the net income (prices, yields, and costs) from each crop were known in advance with complete certainty. Even in such a case, profit is likely to be maximized by a combination of crops rather than a single crop alone. Many times the highest income crop available to growers in California is limited in acreage by government allotments, such as for cotton in the San Joaquin Valley, or by contract, such as for canning tomatoes in parts of the Sacramento Valley. In other cases the seasonal labor and machinery requirements of alternative crops fit together in such a way that these resources can be more fully utilized by a crop combination rather than specialization. A good example in many sugar beet growing areas is the way in which barley fits into the cropping system. Although barley is a low income crop, it utilizes labor and machinery at a time when they might otherwise be idle, and therefore does not compete directly with other crops.

Electronic computers have been widely used to find the most profitable cropping system under the assumed conditions of complete certainty outlined above. Given a farmer's resources (machinery, labor supply, water, land, capital, and management ability), institutional restrictions (allotments, contracts, rental arrangements) and the yields, prices, and costs of production of each possible crop alternative, the computer can select quickly and efficiently the most profitable crop combination. Cropping systems selected in this way provide the highest average income, but in most cases are also fairly high in risk. A financially secure grower can figure that the bad years will be offset by good years and, in the long run, he will maximize average profit by such a high risk plan. However, many farmers are simply not in a financial position to withstand a bad year or two. If a farmer in a precarious financial position goes bankrupt the first year by following a high risk plan, it will be of little comfort to him to know that such a plan would have been most profitable in the "long run."

DIVERSIFICATION TO REDUCE RISK

One essential purpose of crop diversification is to reduce risk to a level considered acceptable by the grower. At the same time, he wants to maintain his average income at as high a level as possible. Ideally, the crops selected in a diversified cropping system are those with high average incomes and whose variations in income from year to year tend to cancel out one another. For example, two crops offer ideal diversification to reduce risk if a bad year for one crop goes hand in hand with a good year for the other crop. Unfortunately, such "opposites" seldom occur. But the grower can usually find crops whose variations in net incomes are quite unrelated. In these cases the factors affecting yields and prices for the two crops will be different. From this standpoint economic research in California has shown that sugar beets are an attractive crop to include in a diversified cropping system. First, sugar beet prices tend to be relatively stable and unrelated to price changes in other commodities. Secondly, the factors which might cause fluctuations in beet yields from year to year do not necessarily affect other crops similarly. For example, when curly top hits sugar beets, crops as barley, safflower, rice, etc., may be unaffected. Spring rains which are detrimental to many other crops are generally beneficial to sugar beets. On the other hand, crops such as dryland barley and wheat would be poor diversi-

* Professor, Department of Agricultural Economics, University of California, Davis.

fication prospects since their prices and yields tend to move together over time.

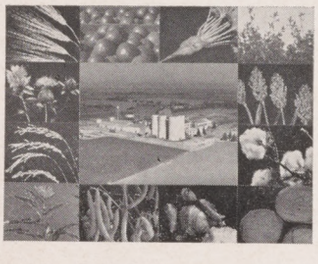
Despite the advantages of including several different crops in a cropping system, many farmers over diversify. It is not unusual to find operations where small acreages of many different crops are grown concurrently. The result is that fields are small, specialized equipment is used for only a few hours a year, and production is quite inefficient. Another limitation to diversification is that inflation or depression in the national economy tends to affect prices for all crops similarly and sharply reduces the effectiveness of diversification against price risk.

DEGREE OF DIVERSIFICATION

Sophisticated computer methods can find the cropping system which gives maximum average income for any specified variability in income. However, the types of data required for such calculations are costly to obtain or simply may not be available. A simplified approach which could help in deciding on the desired degree of crop diversification is as follows: First determine a lower level of net farm income which is considered "critical" for the farm business. For example, the "critical" level of income may be that income below which bankruptcy or other serious financial difficulties would follow. Then consider a number of alternative cropping systems incorporating different levels of diversification with "safe" crops. For each cropping system budget out the net farm income based on average yields and prices. Then, taking a pessimistic view, compute the net farm income of each of the systems, assuming that low yields and prices occur simultaneously for all crops. Eliminate from further consideration any cropping system which gives a pessimistic income below the "critical" level specified initially. From among the remaining cropping systems select that one with the highest average income. This final plan selected is the one which maximizes average income, given that income under even the most unfavorable circumstances is still high enough to avoid serious financial difficulties.

The approach outlined above is not designed to be a "cookbook" for determining the optimum degree of diversification. However, having these figures in front of him, the grower is in a position to more intelligently select the program best adapted to meeting his own goals. One point to emphasize is that there is a substantial element of subjectivity or personal preference in the final plan selected. Two farmers in identical financial conditions and faced with identical crop alternatives might make quite different selections. The critical difference is

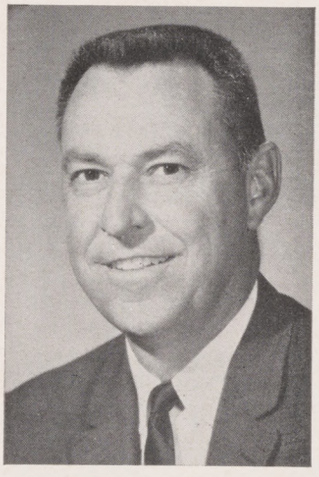
(Continued on Page 36)



COVER COMMENT — This photo prepared by Austin Armer shows some of the multitude of crops which a California grower could include in a diversified cropping system.

1968 SUGAR BEET PURCHASE CONTRACT

By JOHN M. KENDRICK
Agricultural Manager,
Spreckels Sugar Company



SPRECKELS SUGAR COMPANY'S 1968 sugar beet purchase contract remains identical with that of 1967 except for required date changes in the sales year. The contract does, of course, include the revised scale of payments which was significantly improved beginning with the 1967 crop.

However, Spreckels has publicly announced that the initial payment for 1968 crop of sugar beets will be made at an $8.00 NSP level, an increase of about 50 cents per ton over the initial basis being used for the 1967 crop.

This public announcement, made a year in advance of the effective date of the contract, does in effect establish a minimum price for the 1968 crop. The high level of the minimum can be interpreted as an indication of optimism for the sugar market and sugar prices.

The establishment of this minimum return and the optimistic market outlook will be important factors in making cropping plans and in arranging crop financing.

1966 NSP HIGHEST EVER

Spreckels and other California processors have also recently announced the net selling price basis for final settlement for the 1966 crop of sugar beets.

As growers are aware, most processors experienced the highest nets on record for the 1966 crop. If good sugar prices continue, as most observers predict, still better sugar beet payments are in prospect for the 1967 sugar beet crop which started toward factories for processing in early July.

It is our belief that growers should feel real encouragement over the improved sugar beet outlook for both 1967 and 1968. There is much evidence that sugar beet growers are indeed viewing the crop with a much more favorable attitude than prevailed during the past two years. In addition, the U.S.D.A. recently announced that proportionate shares or acreage allotments would not be in effect for the 1968 crop year.

These factors all constitute a healthy sign for the growers, the processors, the California sugar beet industry and the domestic sugar industry.

NEW DEVELOPMENTS IN CHEMICAL WEED CONTROL FOR FALL AND WINTER PLANTED BEETS

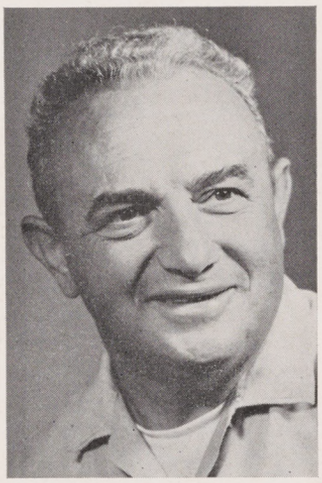
By L. BEUTLER & B. FISCHER*

LAURN BEUTLER

BEETS PLANTED IN the late fall and early winter months are often plagued by serious winter weed infestations. Winter rains usually delay cultivation, allowing weeds to get a head start and chemical weed control alternatives have left much to be desired. Recent developments, however, in the form of some new herbicide combinations and new techniques for their effective use, show encouraging promise. A beet grower now has a greater choice in controlling weeds than ever before. The choices are included in three general chemical approaches in conjunction with mechanical practices.

APPROACHES FOR EFFECTIVE WEED CONTROL

The first approach would be to incorporate the herbicide prior to or in conjunction with the planting operation. The second approach would be to spray the herbicide in a band over the row following planting but prior to the first irrigation for emergence. The third approach allows a wait and see philosophy. After the weeds and beets have emerged and have been evaluated, a selective post-emergence herbicide is then selected and applied.



BILL FISCHER

A wise grower will consider these general approaches to chemical weed control in view of his own special circumstances and weed problems long before planting so his final choice of alternatives will be both timely and effective

Field selection should always be the first consideration in any weed control program. Avoiding fields with serious weed infestations in an important part of successful sugar beet culture. After the field is selected, several factors should be considered in selecting an approach and a herbicide for the job, factors such as planting date, availability of application equipment, anticipated weed problems, efficiency of control, and relative cost.

Since herbicides differ in their ability to control different weed species and some control only grasses while others control only broadleaves, a knowledge of weed species anticipated in each field is, therefore, essential when selecting the best approach.

PRE-EMERGENCE — SOIL INCORPORATED

Preplant soil incorporated herbicides are most effective where weeds and beets are emerging at the same time. The effective period of weed control for some herbicides is 5 to 6 weeks, and therefore, if weeds are slow coming, the ability of the herbicide to control them is reduced. Thus, preplant herbicides are more effective in October and November rather than in December and January.

Soil incorporated herbicides require incorporating equipment which increases their relative cost. However, they have the advantage of being in place before emergence and thereby give weed control when weeds are easily killed. They also have the advantage of giving weed control during wet periods when it is impossible to move equipment into the field.

Tillam has given good results as a preplant herbicide. RoNeet, which is closely related to Tillam, controls a slightly broader spectrum of weeds and causes less injury to the sugar beets. RoNeet controls mainly grasses and some broadleaf weeds. It will control watergrass, volunteer barley, wild oats, rabbit's foot grass, canary grass, and others. It is also effective on fiddleneck, wild lettuce, some pigweeds, and lambsquarter. Tillam and RoNeet, however, are not effective on the mustards including London rocket and shepherd's purse. Therefore, when mustards are the prevalent weed species, these herbicides would not be a good choice.

RoNeet, like other preplant herbicides, requires thorough incorporation in the top 2-3 inches of soil. Large hard clods should be avoided since clods often contain weed seeds which can germinate and escape the herbicide.

Although the combinations haven't been thoroughly tested, current research has shown that RoNeet and Tillam can be used effectively in combination with other herbicides such as Eptam and Pyramin. Possible advantages from these combinations would be in broadening the controllable weed spectrum. Since Pyramin is primarily a broadleaf killer, it can often broaden the range of controllable weed species when combined with RoNeet. There would be no advantage, of course, to this combination if the weeds were primarily grasses. Pyramin has sometimes reduced beet stands when used as a preplant soil incorporated herbicide; therefore, a grower should use caution until he has obtained experience with this chemical under his conditions.

Preplant applications of Eptam are somewhat

* Agronomist, Spreckels Sugar Company and Farm Advisor, Fresno County, respectively.

more toxic to seedling beets than either Tillam or RoNeet and are not recommended because of possible seedling injury. It is an effective herbicide, however, and research indicates possible future advantages in cost reduction and better weed control from low rate combinations of Eptam with RoNeet.

PRE-EMERGENCE BAND SPRAYING

Band spraying after planting but before emergence is another approach that has merit in fall and winter planted beets. This approach has the advantage of lower costs because less area is treated and less expensive application equipment is required. It will, however, require more precise timing on the part of the grower for good results. Its effectiveness depends upon moisture to activate the herbicides and usually works best in association with rain or sprinkler irrigation. However, it can be effective under furrow irrigation also.

The three herbicides that lend themselves to this approach are IPC, Endothal and Pyramin. IPC controls mainly grasses such as annual ryegrass, wild oats, annual fescues, bluegrass, brome, foxtail, canary grass, and volunteer grains. IPC works best under the cool temperatures of November through February when rainfall can activate or move the chemicals into the soil.

The killing action of IPC is through the roots, hence sufficient moisture is required to carry the chemical down to the root zone of the seedling weeds. IPC should be applied immediately before irrigation (1-2 days) or an anticipated rain. For best results application should be made before germination or when the weeds are very small. IPC applied in this manner has given very good grass control from November through March. In areas where winter grasses such as wild oats, canary grass and other grasses are a problem, IPC has provided effective and economical weed control.

Pyramin can also be applied as a band spray immediately following planting but just prior to the first irrigation or rain. When used in this manner, Pyramin is less costly and can be effective on many broadleaf weeds and some grasses. Pyramin controls emerging weeds and hence must be applied before their germination. It also requires rainfall or sprinkler irrigation to move it into the seedling root zone. It is probably not as critical as IPC in requiring moisture within 1 or 2 days of application but for best results a limited amount of moisture will be needed.

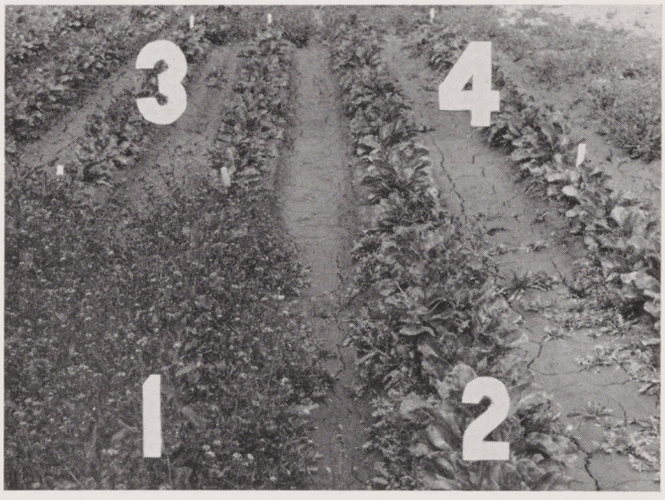
We have limited experience with Pyramin used in this manner in California. However, preliminary research results indicate this practice as having good potential. Pyramin has reduced sugar beet emergence in some cases and caution is suggested until some personal experience with the material has been gained.

Endothal has also been used successfully in this manner. It also requires water to move it into the soil.

(Continued on next page)

PYRAMIN applied post-emergence gave effective control of black mustard. The left two rows were treated with 4 lbs. per acre and the right two rows were treated with 2 lbs. per acre.

PYRAMIN AND DALAPON combination gave effective control of barley and wild oats when sprayed in the seedling stage.



PYRAMIN applied post-emergence gave effective control of most broadleaf winter annuals. (1) Untreated area — fiddleneck, shepherd's purse, London rocket (2) 2 lbs. Pyramin plus 0.5% X-77 spreader — note shepherd's purse (3) 4 lbs. Pyramin, 2 lbs. Dalapon plus 0.5% X-77 (4) 4 lbs. Pyramin plus 0.5% X-77.

POST-EMERGENCE — BAND SPRAYING

The post-emergence approach has the advantage of allowing time for a visual evaluation of the weed problem before treating. The decision to treat, however, must be made shortly after emergence since the weeds are most easily killed in their seedling stage of growth.

The herbicides that lend themselves to a post-emergence approach are IPC in the granular or the emulsifiable concentrate form, Pyramin plus Dalapon combinations, Carbyne and Endothal (for control of fiddleneck).

IPC can be used when the weeds emerging are mainly grasses. As mentioned previously IPC is primarily a grass killer and works best in the cool months of November through February. Here again application must be closely associated with the soil moisture that is required to move the herbicide into the soil. IPC in the granular or liquid form can be applied by airplane immediately before or after a rain or irrigation. IPC has been successfully used under Imperial Valley conditions even with furrow irrigation. The cost of an air application is greater than a band application because of the increased area treated. However, the air application can be used when ground rigs can't enter the field.

Pyramin and Dalapon used in combination is one of the most exciting discoveries for post-emergence weed control for winter planted beets in recent years. Pyramin has been used in pre-emergence approaches before, but it seems to have greater selectivity when used post-emergence. Pyramin and Dalapon work well together when used as a band spray over the beets and weeds. This approach is only effective when used with a spreader which allows thorough wetting of the plants' leaves. Indications are that thorough coverage is essential for effective control. Though the water requirement is from 60-90 gallons per acre, only 20-30 gallons or 1/3 of the area would be sprayed on an acre of beets if a 10 inch band was treated. Band spraying makes this approach economical and efficient. The most effective rate has been 4 pounds of Pyramin (active) plus 2 pounds of Dalapon with 0.5% wetting agent per treated acre. This combination is now sold as a powder formulation.

The weeds controlled will range from broadleaves through many of the grasses and will include most of the broadleaf winter annuals, including members of the mustard family such as black mustard, London rocket, shepherd's purse and others which have previously been hard to kill. It has also controlled rabbit's foot grass, canary grass, wild oats, and volunteer barley.

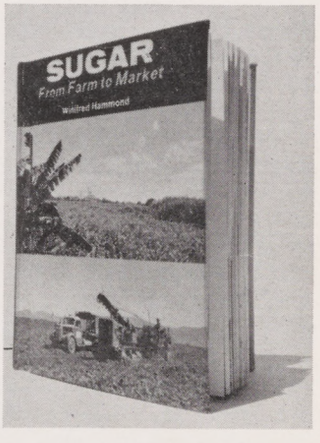
Again, timing is of the utmost importance for good success as weeds are most easily killed while they are young seedlings. Weeds should not be allowed to get past the seedling stage or 1 to 2 inches in height before treating. One exception is black mustard which has been controlled when 6-8 inches tall. But generally speaking, the earlier they are treated the better will be the control. When used in this manner Pyramin also has the advantage of remaining in the soil and hence gives extended protection. Beets can be sprayed in cool weather after the first true leaves are being formed without any injury. During the cool temperature months, very little if any beet injury has been noticed. However, as temperatures increase in the spring and summer, some temporary stunting usually occurs.

Carbyne has been used successfully for wild oat control in young beets. Limited results suggest control of volunteer barley can be attained when Carbyne is used in combination with Dalapon, but at the present this combination is not registered for commercial use.

Growers planting beets in the fall and winter months now have a broader selection of approaches and herbicides for effective weed control. A grower should evaluate his weed problems and select a weed control approach best suited for his conditions, remembering that correct timing is a very critical factor for successful chemical weed control.

SCHOOL BOOK TELLS SUGAR STORY

IT WOULD BE fortunate indeed if every school library in the land acquired Winifred Hammond's "Sugar From Farm to Market" — for then a whole new generaltion would have a proper understanding of sugar.



Winifred Hammond is a professional writer who has been a teacher of science. "Sugar From Farm to Market" reflects this combination of abilities, because the facts about sugar are presented vividly and completely. The author's research has been meticulous, so that every detail of sugar sources, sugar making and sugar uses is accurate and properly related.

Three chapters tell what sugar is, where it occurs, and what it means to people.

Five chapters tell the beet sugar story — from beet seed to the sugar bowl.

Six chapters are devoted to cane sugar, with distinct treatment of growing methods in Louisiana, Florida and Hawaii.

Three chapters take a long view of sugar — its place in the world both geographically and marketwise. Sugar uses and by-products are given thorough attention.

Most chapters end with a suggested project which will bring the chapter's content to life.

The book is copiously illustrated with well chosen, well reproduced photographs (eighteen are the work of Austin Armer, who for 20 years was editor of Spreckels Sugar Beet Bulletin).

"Sugar From Farm to Market" is published by Coward-McCann, Inc. (95 p.p. — $3.29).

SPRECKELS SUGAR COMPANY OFFERS NEW CONCEPT FOR PURCHASING SUGAR BEETS

By JOHN M. KENDRICK
Agricultural Manager,
Spreckels Sugar Company

Reference is made elsewhere in this issue to the 1968 contract which will soon be in the field and which carries the full endorsement of the California Sugar Beet Growers Association.

The form of the 1968 contract has withstood the tests of time and it is difficult to improve an instrument that has been so well accepted for so many years.

Growers have been advised by their association that Spreckels Sugar Company did offer a different form of contract for consideration and the company was complimented in the growers' publication on the "serious and extensive effort" which went into developing the new proposal.

It was indeed a sincere proposal, resulting from substantial effort by Spreckels' personnel. Company spokesmen believed the offered contract to be a fair and generous one. It contained many features which the growers' associations across the nation had expressed as desirable.

From a grower's point of view, the proffered contract, which based sugar beet payments on New York raw market prices rather than a company net selling price, eliminated grower participation in sales expense and thus placed *all* market risk on the processor.

Since New York raw prices on which per ton payments would be based are effectively maintained at or near the U.S.D.A. "Target Price", which, in turn, is calculated by reference to the parity index, sugar beet growers were assured of "built-in" recognition of production cost increases.

Since the New York raw price is more predictable than a net selling price, crop values would be more easily estimated at much earlier dates. Accordingly, initial payments could undoubtedly be made at generally higher percentages of the final payment.

From the processor's point of view, increased outlay for sugar beets testing above average quality and price reductions for beets testing below average quality provided a system of raw material costs which more closely reflected the true value of the commodity purchased.

The proposed contract was not accepted by the California Beet Growers Association Board of Directors for reasons published in the Association's August Bulletin. Accordingly, Spreckels Sugar Company completely withdrew the offer.

Notwithstanding, the company believes it was a worthwhile effort but welcomes the Association's endorsement of the form of the 1968 contract.

See contract article on page 27

PULP PELLETIZING FACILITY INSTALLED AT WOODLAND FACTORY

By S. L. STOVALL
Livestock Specialist,
Spreckels Sugar Company

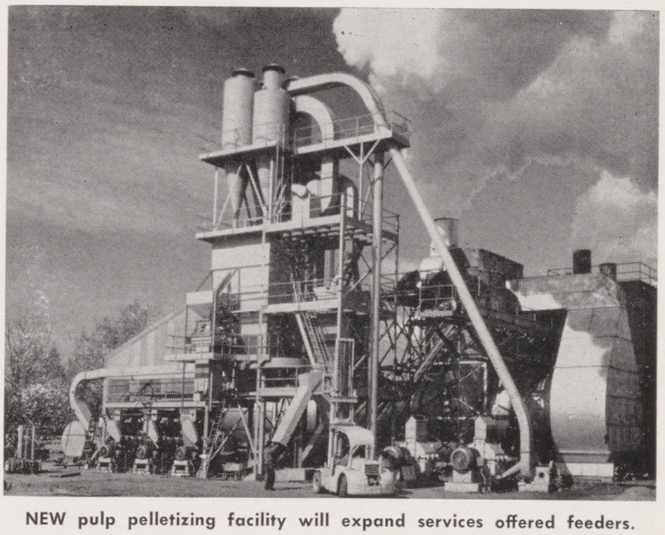
A MAJOR CHANGE in pulp production facilities recently took place at Spreckels Sugar Company's Woodland factory with the installation of equipment capable of pelletizing all the pulp produced there.

Pulp will now be taken directly from the dehydration drums to hammermills, then to a reserve storage tank where it will be withdrawn and fed into two or three 150 horsepower pellet mills. The pelleted pulp will then be screened to remove any fine particles and transported by air to either shipping bins, or to the pulp warehouse.

The shipping bins have a capacity of 300 tons and will be so designed that a truck load of 25 tons or more can be discharged in only a few minutes. This feature will be particularly beneficial to feeders who have been faced with frequent delays in the past due to limited loading facilities.

The higher density of pelleted pulp, about three times that of the regular material, will greatly expand the storage capacity of the Woodland pulp warehouse. This will result in a more uniform, year around supply of pulp for feeders.

Although there is no nutritional benefit derived from the pelletizing of beet pulp, the higher density and better flow characteristics of the material make this pulp useful to certain feeders due to their particular location and feeding situation.

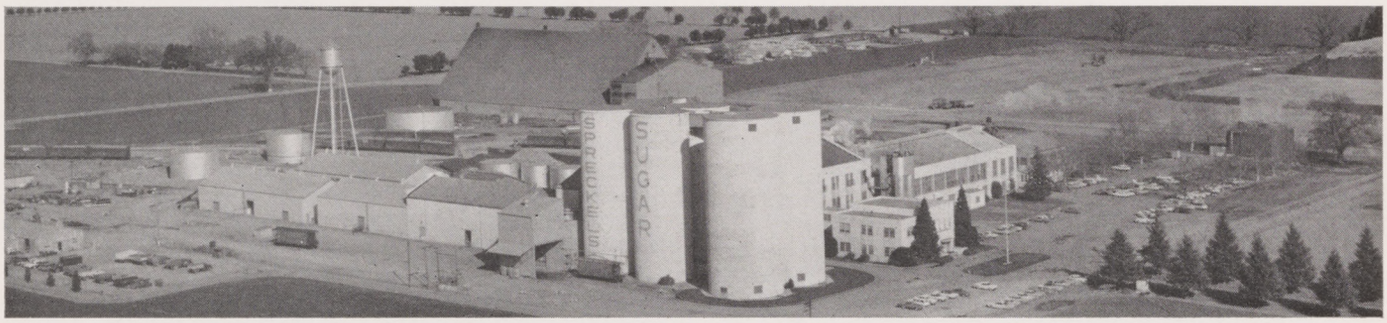


NEW pulp pelletizing facility will expand services offered feeders.

The 1966 Honor Roll

We proudly publish the names of growers whose 1966 sugar beet crops exceeded 25 tons per acre in the Manteca and Woodland Districts. The Summer issue of the Bulletin contained the names of those who earned a place on the Honor Roll from the Spreckels (Salinas) and Mendota Districts.

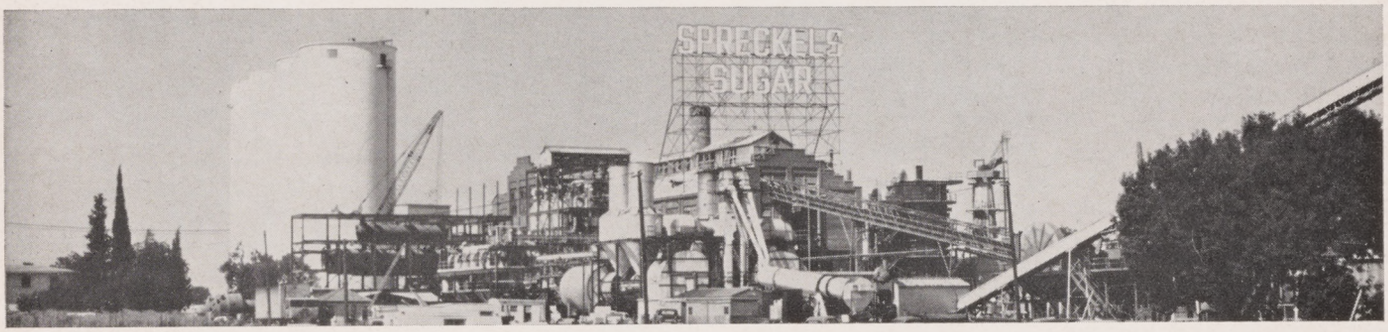
WOODLAND DISTRICT



Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Schroeder Bros.	10	37.65	11,822
James I. Tadlock	113	42.00	11,659
Emmett Heidrick	5	38.13	11,645
William E. Duncan	48	34.79	11,140
Emmett Heidrick	35	35.07	10,900
Emmett Heidrick	5	37.20	10,825
Solano Farms Corp	69	34.26	10,758
J. L. McClish	44	32.41	10,579
Dick & Gary Dettling	33	33.95	10,450
Emmett Heidrick	59	37.08	10,397
Alan Borchard	26	35.92	10,367
Buchignani & Hughes	99	35.07	10,325
M. B. Avilla	72	36.26	10,182
Frederick G. March	32	36.21	10,168
Joe Gnoss, Jr.	53	33.49	10,161
Tom L. Spiva	32	36.21	10,153
Stanley Rooney	13	35.66	10,135
Ernest Dietrich	28	33.21	10,102
Schroeder Bros.	77	32.15	10,031
Fred H. Rehrman & Son	97	29.82	9,960
Van Smith	133	36.84	9,866
Dela Torres Bros.	91	32.19	9,824
Frates & Shimada	24	31.12	9,821
Ernest Dietrich	51	33.23	9,756
Dela Torres Bros.	90	33.47	9,726
Edgar Everett	91	33.34	9,642
James A. Cooley	37	31.75	9,550
Martinelli Bros.	64	32.06	9,521
Harry Gimenez	50	30.91	9,471
Giannoni Bros.	28	31.81	9,460
Wm. L. Davey	66	31.34	9,364
Henry Rehrmann	114	30.60	9,302
Joe Lopes, Jr.	52	33.41	9,154
M. D. Ancheta & Pete Aspiras	79	31.09	9,147
Solano Farms Corp.	68	32.28	9,142
Giannoni Bros.	75	30.44	9,010
Gordon R. Pratt	21	31.22	8,998
Keith B. Nelson	18	29.00	8,984
E. L. Wallace & Sons	109	29.77	8,973
Wilson M. Lovvorn	55	28.54	8,904
J. W. Jones	70	31.74	8,894
Chew Bros.	58	32.55	8,873
James M. Campbell	95	32.66	8,864
Shigaki Bros.	130	26.98	8,860
Harry Gimenez	65	31.97	8,856
Wm. A. McDonald	64	30.61	8,846
Lloyd M. Eveland	29	31.49	8,830
John M. Lear	63	29.70	8,827
M. B. Flores	95	26.38	8,816
J. Dudley Stephens & Sons	33	28.80	8,813
Feliciano Fortis & Sson	88	29.99	8,763
E. M. Ullrich	132	30.17	8,707
Lloyd M. Eveland	139	27.96	8,679
Bulkley Ranch	102	30.32	8,665
Lloyd M. Eveland	93	31.00	8,661
John M. Lear	39	26.49	8,641
Frates & Shimada	37	28.06	8,614
George M. Struve, Jr.	138	30.87	8,582
E. M. Ullrich	74	30.22	8,576
Oji Bros. Farm, Inc.	103	30.69	8,550
Giannoni Bros.	176	28.92	8,526
William H. Jones, Jr.	35	27.91	8,507
Rudy Howald	129	32.45	8,495
A. H. Rominger & Sons	96	25.65	8,449
Lloyd M. Eveland	46	27.93	8,440
Guido Romani	91	26.22	8,422
Nishikawa Bros.	156	34.43	8,477
Chew Bros.	90	29.34	8,409
Sagara Bros.	51	28.58	8,380
Frates & Shimada	34	27.58	8,324
Joe Gnoss, Jr.	85	26.77	8,309
A. H. Rominger & Sons	20	26.00	8,294
E. L. Wallace & Sons	78	30.70	8,277
William E. Duncan	56	27.19	8,277
Carl Hahn	93	26.93	8,273
Meek & LeMaitre, Inc.	50	28.58	8,271
Sagara Bros.	104	28.34	8,270
Bulkley Ranch	22	27.16	8,268
Robert Leslie Button	73	28.51	8,239
Marion Palmer Hickcox	47	30.77	8,228
Rosalind G. Criste	49	32.26	8,149
Univ. of Calif. Farming Operations	3	29.48	8,136
Robert Bedart	38	25.78	8,131
Dan G. Best	147	30.93	8,110
Dan G. Best	22	26.70	8,106
Donald Fong	36	32.80	8,088
Winston P. Peterson	19	25.79	8,088
Heidrick Bros.	271	26.97	8,080
Chew Bros.	87	26.29	8,045
Wallace Bros.	290	33.58	8,032
Leroy Traynham & Son	70	27.13	8,030
Marino Romani	91	27.40	8,028
Holdener & Wiegand	144	25.38	8,000
M & T Farms	31	28.12	7,969
Heidrick Bros.	169	26.07	7,962
Thomas R. Mabalot	63	27.55	7,962
Van Smith	73	26.13	7,954
Heidrick Bros.	489	26.75	7,950
Catherine Strehle & Sons	38	28.60	7,928
Winston P Peterson	26	28.30	7,924
Heidrick Bros.	353	26.47	7,915
James I. Tadlock	19	27.92	7,913
Solano Farms Corp.	237	25.18	7,891
Richard Moore	120	27.29	7,887
Nishikawa Bros.	54	26.75	7,886
Harlan & Dumars	160	30.42	7,879
H. L. Fredericks, Jr.	66	26.81	7,839
Dela Torres Bros.	85	30.24	7,826
Manuel Bastiao	114	26.65	7,803
L. Knight Co.	63	28.57	7,800
Sieferman & Long	75	31.40	7,775
Jimmy Leong	205	29.09	7,761
Solano Farms Corp.	144	25.81	7,748
Solano Farms Corp.	69	26.27	7,744
Robert J. Rooney, Sr.	68	28.72	7,720
Joe Lopes, Jr.	197	27.07	7,704
Fred H. Rehrman	122	28.10	7,654
Dan G. Best II	50	26.79	7,603
M. B. Avilla	34	25.12	7,591
Bulkley Ranch	71	26.07	7,576
Orth Bros.	46	26.98	7,571

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Keith B. Nelson	36	25.09	7,567
Alfred W. Cruickshank, Jr.	36	31.18	7,558
Harley Rominger	18	30.42	7,556
Edgar Everett	46	27.89	7,547
J. L. McClish	67	26.72	7,546
M. Martinez	108	25.35	7,544
Meek & LeMaitre, Inc.	70	27.44	7,524
Newhall Land & Farming Co.	112	28.55	7,514
Oji Bros. Farm. Inc.	86	27.49	7,505
Keith B. Nelson	155	26.38	7,502
Haussler Bros.	156	25.06	7,473
Porterfield & Stephens	125	28.45	7,465
Lenel Farms	167	25.78	7,461
Carl Hahn	84	30.04	7,438
Roger D. Moore	65	27.92	7,432
Carl Hahn	19	30.73	7,431
Rudy Howald	58	29.55	7,429
James A. Walker & Son	103	25.92	7,408
Meek & LeMaitre, Inc.	138	26.91	7,384
Harry Gimenez	24	27.21	7,347
Eugene G. Cain	26	28.66	7,331
J. H. Braden	20	25.52	7,268
Morris Carden	37	25.93	7,250
Anderson Bros.	211	26.29	7,235
M. B. Avilla	111	28.16	7,198
E. L. Wallace	176	29.16	7,197
Heidrick Bros.	96	25.47	7,193
Mas Ojima	35	25.94	7,191
M. G. Machado	34	26.36	7,186
Jack Perry	8	30.10	7,182
Illene M. Hutson	54	25.04	7,181
Schneider Fricke & Schneider	249	26.14	7,173
Wallace Bros.	220	25.64	7,138
Oji Bros. Farm, Inc.	95	25.27	7,136
Floyd E. Warner	62	31.52	7,130
E. L. Wallace & Sons	140	27.62	7,082
Eldred R. Reel	74	26.45	7,078
John M. Lear	126	25.54	7,044
J. Dudley Stephens & Sons	37	25.47	7,025
Heidrick Bros.	184	29.99	6,994
Oji Bros. Farm, Inc.	143	26.88	6,983
Robert A. Paschoal	32	26.99	6,969
Robert J. Rooney, St.	57	27.08	6,916
Harlan & Dumars	136	26.58	6,874
Wallace Bros.	324	26.91	6,754
Martin Bros.	78	26.49	6,739
Meek & LeMaitre, Inc.	97	26.54	6,715
Keith B. Nelson	128	26.17	6,689
Meek & LeMaitre, Inc.	100	26.08	6,645
Catherine Strehle & Sons	128	26.98	6,578
James I. Tadlock	19	25.55	6,531
Heidrick Bros.	104	25.08	6,511
Wallace Bros.	148	29.10	6,483
Fred Joost	51	25.16	6,371
Pete Konitzer	225	25.13	6,358
Dela Torres Bros.	28	31.62	6,356
John E. Jackson	46	25.20	6,179
Dela Torres Bros.	101	29.50	6,148
Albert E. Tandy	60	25.57	6,101
Miramontes Farms	254	24.98	5,885
John E. Jackson	6	27.15	5,218

MANTECA DISTRICT



Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Fumio Nishida	11	44.35	13,660
Ronald Ohm	14	38.09	12,135
Peter A. Stolich Co. Inc.	48	40.50	11,956
Fumio Nishida	22	35.38	10,904
Stephen Pellegri	41	33.49	10,770
Robertson & Sons	90	31.18	10,346
Theodore R. Baskette	76	32.90	10,317
Joe Toste	73	35.60	10,288
Manuel L. Costa	98	35.84	10,171
D. & A. Togninali	74	31.93	10,096
Kiyoi Bros.	47	32.53	10,071
Lester Rodgers	105	32.82	10,004
Tony J. Pereira	157	32.81	9,823
Gambini & Boyce	21	31.28	9,797
Calcagno Farms	17	33.26	9,785
R. E. Albertsen	80	32.50	9,757
Dexter Bros.	48	30.28	9,708
Pombo & Sons	89	31.26	9,703
Wm. H. Fisk, Jr.	65	29.93	9,637
Kiyoi Bros.	50	34.54	9,554
Arnaudo Bros.	40	31.74	9,471
Claernce A. Nilsson	84	28.20	9,357
Calcagno Farms	121	31.26	9,309
Manuel Amaral, Jr.	27	30.55	9,299
Stephen Pellegri	31	34.24	9,258
Frank Ormonde	66	30.17	9,226
Kaiser & Lindeman	110	30.93	9,205
Maciel Bros.	60	27.53	9,129
James A. Luis	80	30.36	9,120
Merlin Miller	73	28.76	9,013
Calcagno Farms	26	31.71	8,993
Ronald Ohm	75	29.12	8,957
Joseph L. Nomellini	50	32.74	8,859
Jack Kimoto	148	29.35	8,852
Enos & Woodward	135	30.02	8,754
Harold S. Aoyama	47	30.41	8,746
Jory Bros.	80	33.86	8,695
Joey Ratto, Jr.	25	28.83	8,695
Pombo & Sons	69	25.43	8,687
Grant & Wilson	46	27.76	8,656
Brocchini Bros.	130	26.10	8,650
Jory Bros.	85	32.24	8,602
Takemori Bros.	8	26.55	8,544
Tanaka Farms	74	27.83	8,510
Murata Bros.	81	32.27	8,500
James A. Luis	95	26.46	8,467
Cleverland	115	25.62	8,449
Arnaudo Bros.	30	26.75	8,442
Albert Fonseca	55	26.36	8,440
Joe Gambini	24	29.55	8,410
Mitsuo Kagehiro	74	25.98	8,371
D. & A. Togninali	73	28.74	8,358
Tony A. Sanchez	55	25.85	8,339
Louis W. Pelucca	26	26.79	8,337
John & Robert Bogetti	91	26.88	8,333
Manuel Amaral, Jr.	51	26.81	8,333
Raymond Owning	96	26.72	8,278
Robert Norman	153	26.66	8,201
H. Ehlers & Sons	74	26.31	8,198
George Mitsuda	50	27.50	8,173
M. C. Thorkelson & Co.	108	29.25	8,149
R. E. Thorsen	74	25.31	8,145
Westing Farms	89	26.74	8,108
H. Ehlers & Sons	135	26.59	8,014
Joey Ratto, Jr.	40	29.59	8,013
Grant & Wilson	79	25.39	8,003
Takemori Bros.	35	27.93	7,999
Manuel Silva, Jr.	37	25.68	7,966
Frank Giannecchini	31	25.66	7,872
Tony A. Sanchez	78	25.84	7,830
Tony A. Sanchez	72	29.54	7,804
Enos & Woodward	135	26.75	7,800
Nobuo Sakamoto	45	27.77	7,692
Enrico Pizzi	12	26.74	7,557
Tony A. Sanchez	100	26.74	7,498
Uyeda Bros.	68	25.00	7,490
Joe A. Silva	29	26.02	7,483
Theodore R. Baskette	85	27.66	7,441
James A. Luis	90	26.16	7,335
Wm. F. Garden	72	25.07	7,325
H. C. Baumgartner	73	24.99	7,282
Caminata & Podesta	76	26.60	6,570
Nunes & Verhagen	32	25.20	6,350

AGRICULTURAL STAFF NOTES

MORRIS BALL
Field Superintendent — Bakersfield

KERN VALLEY FARMS, owned and operated by Jim Trino, Sr. and Jim Trino, Jr., came up with an interesting adaptation in the field of mechanical blocking. Using a standard four-row Eversman thinner, they removed the old Eversman thinner blades and replaced them with disc blades. The disc blades measure 18-20 inches in diameter and are notched so there are six 6 inch blades with 4 inch gaps between each blade. When in operation, this combination results in a 6 to 8 inch cut, leaving approximately 2 inches of undisturbed soil and usually single plants. The unit has done an excellent job where the seeding rate is in the range of six to eight seeds per foot and is readily adaptable to increases or decreases in seeding rates.

This tool was used by Kern Valley Farms to block their entire 146 acre beet crop. A hand crew followed the blocking operations to completely single all plants and thin areas missed by the blocker.

The final result was an excellent stand averaging approximately 150 plants per 100 feet of row. Since weeds were not a problem at the time the above operations were performed, the total cost per acre for weeding and thinning was reduced to an economical $12.00 per acre.

Kern Valley Farms has also used this unit for blocking their cotton as well as their sugar beets. In both cases the per acre cost of weeding and thinning was satisfactorily reduced.

JIM TRINO used his Eversman thinning unit with adapted disc blades on cotton as well as sugar beets.

W. W. PORTER
Field Superintendent — Woodland

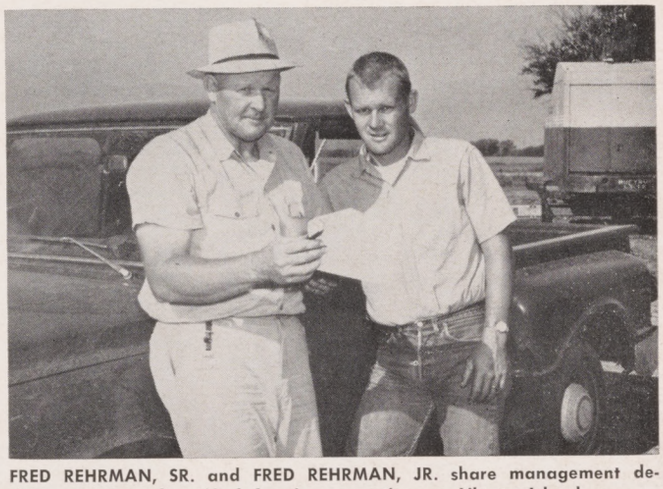
FRED REHRMAN has operated a successful and diversified farming operation on Liberty Island since 1953. Fred has grown sugar beets every year and his success is attested to by a 14 year average of 26.7 tons per acre on approximately 120 acres. This is especially noteworthy since sugar beets generally have to be harvested early due to the flood potential on Liberty Island.

Fred Rehrman, Jr., recently joined his father's farming operation. He shares in management decisions which the elder Rehrman feels has contributed to the operation's success.

Other crops grown in the diversified Rehrman operation include tomatoes, safflower, baby lima beans, and milo.

Although there is no secret to the Rehrman's success in producing high yielding beet crops, there are several practices they fell are important:

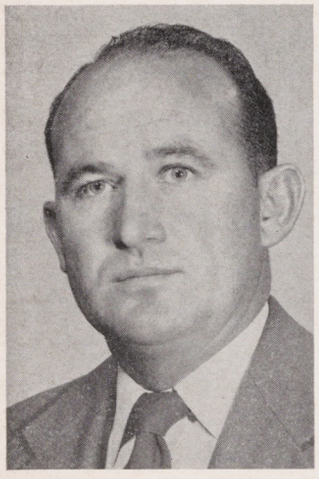
1. Land preparation should be done in the fall while the ground is dry. In the Rehrman's particular area this includes preceeding sugar beets with a dry crop such as safflower and having ground plowed 12-15 inches by the middle of September.
2. Soil should be dried out before any work is begun in the spring.
3. Sugar beets should never suffer for water. The Rehrman's use a sprinkler system and irrigate frequently. Irrigation frequency is increased or decreased as the weather warrants.
4. Timing is important, whether it be cultivating, thinning, fertilizing, or irrigating. The Rehrmans feel there is no substitute for getting the job done on time.



FRED REHRMAN, SR. and FRED REHRMAN, JR. share management decisions in their diversified farming operation on Liberty Island.

VIRGIL HORTON

Field Superintendent - Manteca



THE JANUARY 21, 1899 issue of the Stockton Weekly Independent contained an article entitled "The Sugar Beets — Favorable Weather Has Increased the Acreage in This County." The article read as follows:

"K. G. Raaf, who is visiting the various sections of this part of the State and interesting the farmers in the culture of sugar beets, was in Stockton yesterday. He stated that he was well pleased with the outlook and felt assured that the Crockett factory, which he represents, would have sufficient beets next year to keep it busy the entire season. He has met with great success everywhere he has been and many who never planted beets before will do so this year.

When questioned about the raising of beets in Fresno county Mr. Raaf replied that while he had not as yet had much time to look into the proposition he had been informed that some beets would be grown there. He will make a trip to that section as soon as he can arrange his business in this county and will call on the farmers in Fresno county with a view of instructing them in the proper way to cultivate the vegetables most advantageously and to make contracts with them.

From Stockton the agent will go to New Hope this morning and expects to secure several more large tracts of land as the heavy rains have caused much interest to be taken in the culture of beets, as those who have been fortunate enough to see the results of last season have come to the conclusion that they can make more money on beets than grain. Mr. Raaf will probably return to Stockton some time next week to meet several farmers who wish to talk with him."

SPRECKELS SUGAR COMPANY INTRODUCES NEW CONSUMER ITEM

Campers, boaters, picnickers, hikers, fishermen and others who frequently partake of meals in the boondocks but still prefer their coffee, tea and cereal sweetened just like home, will delight in Spreckels Sugar Company's new idea — a teaspoon of granulated sugar in its own package.

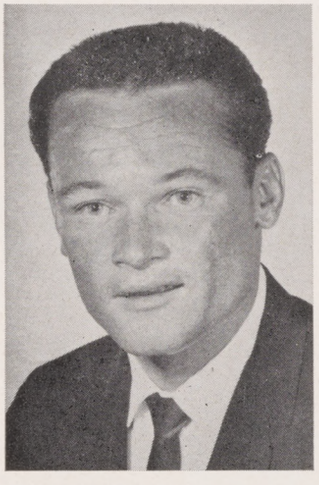
The teaspoon servings, attractively and conveniently packaged 50 per container, are now available to outdoor enthusiasts in the sugar section of grocery stores.

Up to now individual sugar packets produced by sugar companies have been available in bulk lots only to restaurants and other group feeding establishments.

Spreckels' new consumer line of teaspoon-sized servings will not only be convenient for the weekend camper, it should, say restauranteurs, help stop the "mysterious disappearance" of sugar packets from their restaurants. It seems that some outdoorsmen load up on the restaurant's sugar packets in anticipation of their next outing.

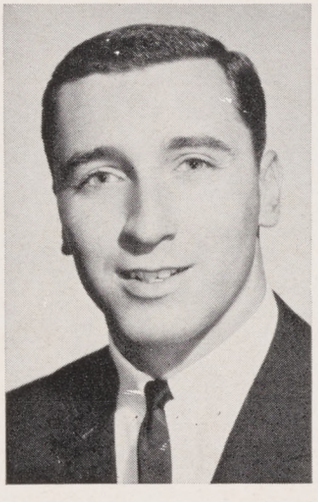
Spreckels calls the new line HANDY PAKS.

AGRICULTURAL STAFF CHANGES



JERRY SAGASER, formerly Assistant Field Superintendent at Woodland, was recently appointed Field Superintendent in the Woodland District.

Mr. Sagaser was farm-reared at Avenal, California and attended Fresno State College before his transfer to the University of California at Davis. He graduated with a Bachelor's Degree in Agricultural Business Management and joined the Spreckels Agricultural Staff as an Assistant Field Superintendent at Woodland in June, 1966. He resides in Davis.



NORMAN RIANDA, formerly Field Superintendent at Manteca will replace Dan Banta as Field Superintendent in the King City area of the Salinas Valley. Mr. Banta recently accepted a position with the Best Fertilizer Division of Occidental Petroleum Corporation.

Mr. Rianda is a native of Gonzales, California. He received a degree in Agricultural Business Management from Cal Poly in 1964. He was employed by Spreckels Sugar Company in the fall of 1964 and assigned to the Manteca District as an Assistant Field Superintendent. In the fall of 1965, he was appointed to his present position of Field Superintendent in the Walnut Grove, Isleton and Collegeville areas.

The Riandas will reside in King City.

CROP DIVERSIFICATION

Continued from page 27

the grower's willingness to accept risk. In the decision framework indicated above, for example, the conservative grower would be likely to set his "critical" level of income rather high and budget his pessimistic crop plan on the basis of very low yields and prices. This would tend to force him to a "safe" plan with low income variability, but also a rather low average income. A grower more willing to take risks would do the opposite. He would tend to set a very low "critical" level and be less pessimistic about the lower levels of yields and prices which might occur. This would tend to lead to a plan with higher average income but with greater income variability.

Calculations of this sort have been carried out for several areas of California. In general, the higher income crops, including sugar beets, provide income sufficiently high so that, even under unfavorable circumstances, they compare favorably with lower income crops. Therefore, even cropping systems diversified to reduce risk tend to include relatively large acreages of the high income crops.

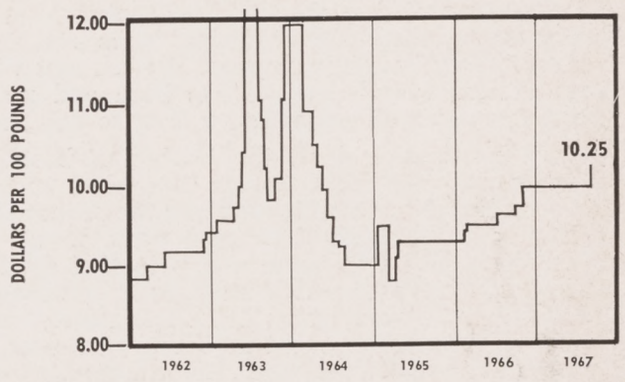
BEET LEAFHOPPER TOUR

MEMBERS OF DISTRICT 4's Agricultural Field and Research staffs recently received instructions in the proper methods of field identification and population sampling of the beet leafhopper, the only known vector of the curly top virus. The instruction was provided by Donald Fehlman and Donald Bowman, Economic Entomologist and Field Assistant respectively, of the Bureau of Entomology, California Department of Agriculture.

The group toured portions of the Westside foothill area which serve as winter breeding grounds for the beet leafhopper. During the tour, the two experts discussed the State's Beet Leafhopper Project which includes the year around surveillance of beet leafhopper populations and the annual spray program. The spray program covers extensive areas along the Westside foothills from Merced County on the north to Kern County on the south and has helped to minimize the threat of extensive curly top damage. Mr. Fehlman described the Beet Leafhopper Project in the Spring 1967 issue of the "Spreckels Sugar Beet Bulletin" in an article entitled "The Beet Leafhopper In California". Close cooperation between company personnel and State personnel this year led to timely applications of insecticides for beet leafhopper control.

QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. Factory



DONALD FEHLMAN (second from left) and **DONALD BOWMAN** (fourth from left) instruct District IV staff members in the proper sampling procedures for the beet leafhopper, the only known vector source of the curly-top virus.

The SPRECKELS SUGAR BEET BULLETIN is issued quarterly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers.

Mention of specific methods, devices and implements does not constitute an endorsement by the Company.

All photographs by the editor unless otherwise indicated.

GERALD NORDSTROM, EDITOR SPRECKELS SUGAR COMPANY MENDOTA, CALIFORNIA

SPRECKELS SUGAR BEET BULLETIN

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

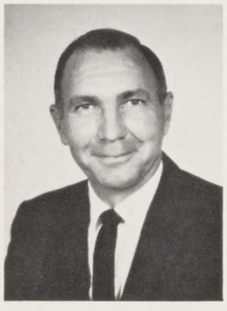
VOL. 31 WINTER, 1967 NO. 4

Spring and Summer Weed Control -- 1968

Spring And Summer Weed Control -- 1968

By Lauren Burtch

Mr. Burtch is Chief Agronomist for Spreckels Sugar Company in California and Arizona. He directs his research efforts from Factory 4, Mendota.



IN the fall issue of the Bulletin, new developments in chemical and weed control were discussed with special reference to fall and winter plantings. The article covered the principal pre-emergence and early post-emergence approaches toward chemical weed control for sugar beets in all areas. Although the principal emphasis was on fall and winter planted beets, much of the information presented may be directly applied to spring planted sugar beets as well.

Growers who plant beets in the spring of the year, that is between March 1 and June 1, now have the available materials and methods necessary for obtaining season long weed control. Unfortunately, there is an important difference between having the materials and being able to combine several approaches required to accomplish a final objective of season long weed control. Thinning is important, weather conditions are important and so are most other agronomic practices used in sugar beet production. Nevertheless, every grower should be aware of the available and recommended practices and attempt to incorporate as many of them as possible into his sugar beet program.

FIELD SELECTION

Nearly every article written on weed control in any crop makes reference to the importance of field selection as a weed control fundamental. The recent improvements in weed control practices should gradually make the job easier by providing a broader choice in cropping programs. Better weed control methods should permit the establishment of desirable rotations for all crops. As a part of rotation planning, each grower should consider the advantages of planting beets on the cleanest and most productive land available in order to maximize his return. Above all, the grower should discuss all phases of production with his field superintendent before fields are selected.

LAND PREPARATION

Once a field is selected, the next step in the weed control program is land preparation. This is another important phase of production which often does not receive sufficient consideration, especially during the spring planting season when time is short. Spring weather can be the principal factor limiting seed bed preparation. Too often, May beets are planted under serious clod conditions which not only limit pre-emergence weed control incorporation but also restrict planter operation, seed placement and emergence. In this regard, most growers who plant in the spring should seriously consider the value of pre-irrigation, not only for seed bed preparation and additional weed control, but also for faster coverage of the field with the first irrigation after planting. Most beets in the over-wintering areas are not planted until after May 1, because of virus disease problems. Therefore, a pre-irrigation in April can often reduce the period between planting and thinning simply by creating a better seed bed in which faster and more complete emergence can occur.

Before the early stages of land preparation have been completed, the decision of whether or not to use a preplant herbicide and how to apply it should be made. At this point the listing operation should be mentioned, for a poor listing job can become a serious liability for all subsequent operations including weed control. The listing operation should leave well defined beds of the proper height for water control, subbing, and cultivation operations. The beds should be listed in even multiples of the planter, for example, a five or nine bottom lister should be used for a four bed planting arrangement. This permits one of the outside shovels to return in the last furrow of the previous pass. The marker should be checked frequently and guess rows measured periodically because

LISTING is an important operation and should leave well defined beds of the proper height for water control and cultivation.

CAREFUL field selection combined with the correct choice of material and application method plus the timely supplemental use of cultivation equipment all contribute greatly to the desirable goal of clean, weedless sugar beet fields at harvest time.

the present day precision sled has little tolerance for narrow guess rows.

PREPLANT APPROACH

The spring planting areas have widely accepted the principal of pre-planting herbicides, usually Tillam, with soil incorporation. This approach is most effective during this season because the principal weeds emerge with the beets. The preferred application method is to pre-shape the bed, spray a band of herbicide, incorporate the material with a power driven incorporator and roll with a flat or spool type roller. Care must be taken to spray a band slightly wider than the width of the incorporator so that only treated soil will be mixed. The incorporation depth must be accurately set to thoroughly incorporate the top 2-3 inches of soil. To insure thorough incorporation, the knives should be checked frequently, for broken or missing blades cannot provide the necessary mixing action. The roller should also be set carefully so that it does not disturb the treated area. Ro-Neet, which is closely related to Tillam, combines slightly more safety for sugar beets with a slightly broader spectrum of weed control. This material may gradually replace Tillam and will be used at the same rate (4 pounds per treated acre). Both Tillam and Ro-Neet provide effective watergrass control and also are effective against summer broadleaf weeds.

The principal disadvantage of band incorporation lies with the problems and cost of the incorporation operation, yet in spite of these disadvantages, band incorporation remains the preferred method for most areas. Broadcast sprays with immediate disk incorporation are preferred by some growers in some areas, but this approach requires more chemical and requires careful listing and shaping so that only treated soil is brought into the planting area.

There are other pre-emergence soil incorporated herbicides such as TCA, Endothal, and Pyramin but

each presents problems of limited weed spectrum or excessive mobility with water. Nevertheless, they can be useful under sprinkler irrigation or rainfall conditions. Again, your field superintendent or local farm advisor is a fine source of information regarding any of the registered pre-emergence herbicides for any local area.

POST EMERGENCE APPROACH

The advantages of a post-emergence approach using Pyramin and Dalapon plus a wetting agent, were also discussed in the Fall issue of the Bulletin. This approach permits the grower to evaluate the weed problem before treating. The Pyramin and Dalapon combination has provided very good control over both broadleaf weeds and grasses, including members of the mustard family, shepherd's purse, volunteer barley and many winter annual grasses. Control has been most effective when the material has been applied directly to the foliage of both sugar beets and weeds. Thorough coverage is required and while the material is rather expensive, band applications make the use of the combination, both economical and effective. Timing is very important, for weeds are most easily killed when they are in the seedling stage. This is especially true of broadleaf weeds such as lambsquarter.

The application of Pyramin and Dalapon is new, and limited information available indicates that the combination is most effective on winter and early spring annuals. Therefore, until more data has been acquired, recommendations are not being made at this time for applications after April 1.

When correctly applied at the recommended rates, pre-emergence chemicals usually provide from four to six weeks effective weed control. For spring planted sugar beets, they should provide weed control protection past the thinning stage. If season long weed control is sought, supplemental control is usually required by the time beets reach the six leaf stage. This can be provided effectively with mechanical rolling cultivators or sleds with tools such as Planet Jr. Spyders and row crop weeders. While the mechanical tools are effective when used in a timely manner, they have to be used repeatedly if fields are to be kept clean through the summer. The burden of cultivation usually becomes too great for most growers because of the pressure of irrigation cycles and the cultural care of other crops. Therefore, most growers would prefer to use a supplemental herbicide to control summer weeds in the beet row.

POST THINNING APPROACH

One of the most encouraging chemical developments for post thinning weed control is Treflan. This material has given excellent control of summer annual grasses, pigweeds, and lambsquarter. The material is economical and when used at ½ to 1 pound per acre should provide control to harvest.

Since no herbicide is a simple cure-all, several factors need to be considered before applying Treflan

A PRE-EMERGENCE application of Tillam gave effective weed control, however the weeds between the sugar beet rows should have been removed by cultivation before reaching this size.

or similar materials. First, Treflan will not control established plants which is why applications can be made to sugar beets after they are established. Secondly, Treflan must be incorporated into the soil. This means it should be sprayed on the complete bed, including the furrow and mixed thoroughly. The Lilliston rolling cultivater provides effective incorporation if it is set to throw treated soil into the beet row. Care should be taken not to "hill" the beets because this practice encourages soil borne rot organisms to attack the crown of the beet. Further, Treflan treated soil can create a "mushroom" damage to the beet crown. Since the material is quite volatile, incorporation should immediately follow the application. Repeated cultivation often helps rather than hinders weed control providing fresh untreated soil is not moved into the beet row. Remember weeds present at the time of the application are not controlled and need to be removed physically. Also remember that Treflan is a long lasting herbicide and only tolerant crops should follow Treflan treated crops.

There is considerable interest in applying herbicides in the irrigation water. This approach has obvious advantages as well as disadvantages. The only recommended material, Eptam, is easily mixed in the irrigation water and seems to sub into the bed well enough to control water grass and pigweed seeds as they germinate. Unlike Treflan, Eptam will often control

newly emerged weeds and will at times delay the development of young established grasses. Another advantage is that it does not have to be mechanically incorporated. The material has proven most effective when applied at rates of 2 to 3 pounds per acre with complete subbing of the entire bed. The principal disadvantages of Eptam lies with its short life period and in the necessity for maintaining complete and accurate water control.

One of the principal irritants to most sugar beet growers is the difficulty they experience in maintaining weed free beets through harvest time. These difficulties should not be minimized, but if ever the old saying of "not farming as well as I know how" has a sugar beet application, it is in the direction of weed control. It should no longer be necessary to see weeds choke irrigation furrows in mid-summer for several timely furrowing operations with or without lay-by chemicals can help eliminate this problem.

Weeds in the row are admittedly difficult to control, but timely and accurate chemical applications on well formed beds can do much to keep the beet row clean through the thinning stage. The cost of hoeing has tended to discourage the use of labor for summer weed control, but clean fields can still be harvested without hand labor by the timely combination of late season herbicides and mechanical cultivation. *The belief that — it costs to control weeds should be changed to the positive emphasis that it pays to control weeds in sugar beets.* This statement applies to the return from the sugar beet crop as well as the avoidance of future weed problems for succeeding crops.

One last thought — no chemical is any better than the way in which it is used. Careful field selection, correct choice of material and application method and timely supplemental use of cultivation equipment all contribute to the goal of clean beet fields at harvest.

Herbicides Cleared For Use On Sugar Beets

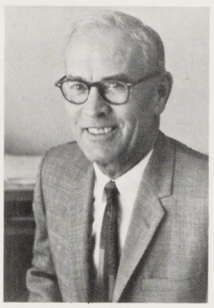
The following table is an up to date listing of the herbicides currently cleared by the Pesticide Regulation Branch of the United States Department of Agriculture for use on sugar beets in California. This table is not a blanket recommendation of the materials shown and since registrations change so frequently may be incomplete. The materials shown can only be used within the limits of the specifications shown. Before using any chemical on your crop, it would be advisable to check its registration with your Field Superintendent or with the County Agricultural Commissioner's office.

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
Avadex	Pre-plant Soil Treatment	1.5 Lbs. Actual/A.	Pre-plant soil incorporation to depth of 1-2 inches immediately after spraying.
Barban	Foliar	12-16 Ounces	Apply when wild oats are in 2-leaf stage (4-9 days after emergence). Do not apply later than one month after crop emerges). Do not allow livestock to graze treated fields until after crop is harvested.
Carrot Oil	Foliar	100 Gals./Acre	Pre-emergence to beets.
Dalapon	Foliar	6.0 Lbs. Actual/A.	Post-emergence. Apply when beets emerge as directed, spray until the 4-leaf stage.
		14.6 Lbs. Actual/A.	Pre-emergence. No soil incorporation at time of planting.
DNAP-DNBP (Sinox General Plus Dow General)	Soil Treatment	1.5 Lbs. Actual/A.	Pre-planting application.
Endothal	Soil Treatment	6.0 Lbs. Actual/A.	Pre-plant soil treatment incorporation to depth of 2 inches. Do not feed tops of treated beets to livestock.
IPC	Pre-plant	5.0 Lbs. Actual/A.	Apply 1-2 days before planting. Disc into top 4 inch soil.
	Foliar	6.0 Lbs. Actual/A.	Post-emergence. Apply when sugar beets are well rooted.
Pentachlorophenol	Soil Treatment	4.0 Lbs. Actual/A.	Pre-emergence. Apply two days before emergence of sugar beet seedlings. Repeat with 5-6 treatments as perennial weeds reappear and before 2 inches high.
Pyramin	Soil Treatment	3.0 to 4.0 Lbs. Actual/A.	Pre-plant soil incorporation no deeper than 2 inches.
Ro-Neet	Soil Treatment	4.0 Lbs. Actual/A.	Pre-plant soil incorporation to 3 inches.
TCA	Soil Treatment	9.0 Lbs. Actual/A.	Pre-emergence soil treatment. Do not use treated tops for food or feed.
Tillam	Pre-plant	4.0 Lbs. Actual/A.	Pre-plant soil application mixed with 2-4 inches of soil.
Treflan	Soil Treatment	½ to ¾ Lbs. Actual/A.	Post-thinning. Soil incorporated to 2 inches.

Sugar Act Regulations Reviewed

By J. T. Moody

Mr. Moody is a Program Specialist, for the California State Stabilization and Conservation Service, Berkeley.



BECAUSE the government's compliance payment represents a sizeable portion of the total returns from sugar beets, it is to a grower's advantage to have a general knowledge of the necessary requirements to qualify for these payments. Space does not permit detailed discussion of the items covered in this article, so I will try to present the essential points in capsule form. If you want more information on any phase of the program it is available at your local ASCS county office.

ABANDONMENT PAYMENTS

Sugar beet acreage abandoned due to drought, flood, storm, freeze, disease or insects after it is too late to replant in the same crop cycle is eligible for payment on the basis of one-third of the farm's normal yield. Conditions for payment are as follows:

(1) The intended abandonment must be reported to the county ASCS office BEFORE the beets are destroyed.

(2) The beets must have been planted on suitable land and cared for in a suitable manner up to the time of abandonment.

(3) The farm must be located in an approved abandonment and deficiency area — one in which the yields on 10 percent of the farms or 10 percent of the acreage are below 80 percent of the normal yields of such farms.

DEFICIENCY PAYMENTS

A farm on which the production of sugar beets is below 80 percent of its normal yield due to one or more of the six reasons listed above, may be eligible for payment at the rate of 80 percent of the normal yield. The conditions for payment are the same as those for abandonment except that it is not mandatory, though desirable, that a possible deficiency be reported to the ASCS county office before harvest.

MINIMUM WAGE REQUIREMENTS

Based on testimony presented at a hearing each year and other available information, the Secretary of Agriculture establishes minimum wages which must be paid to sugar beet field laborers. In order to qualify for the Government conditional payment, the grower must have records to prove that each laborer was paid at a rate not lower than the minimum wage established for each operation. Form SU-134, Daily Wage Rate Record Sheet is available at ASCS county offices. If it is filled out properly, this form provides a complete record of wages paid and is acceptable proof to county offices that the wage requirements have been met. If you don't want to use the form, any other record, such as a signed payroll sheet, which provides the same information is acceptable.

If you use a labor contractor, we urge that you provide him with Form SU-134 or satisfy yourself that he furnishes you complete records on every worker on some other form. It is the grower's responsibility, not that of the labor contractor, to see that the minimum wage requirements are met. If the contractor doesn't keep acceptable records, it could cost you your Government payment.

CHILD LABOR

The Sugar Act prohibits the use of children under 14 years of age as laborers in the beet fields. It also prohibits working a child of 14 or 15 in sugar beets more than eight hours a day. Violations of these provisions of the law will result in deductions from the conditional sugar payment at the rate of $10.00 per day for each child involved.

THE MAKEUP OF A FARM

The sugar regulations define a "farm" as "all land farmed by an operator within a State . . . ." An "operator" is defined as the person who controls and directs the sugar beet operations on the farm, who has the authority to make final decisions with respect to the beet crop, and who bears all or the major portion of the financial risk or opportunity for financial gain in connection with the crop.

These definitions are important because of the scaledown provisions of the Sugar Act which require a reduction in the Government payment when the production on one farm exceeds 7,000 cwt of sugar. Some growers who set up separate beet operations for various reasons such as getting a son started or for tax purposes have gotten into difficulties under the program regulations. A recent review of sugar beet operations by ASCS county committees disclosed that these growers had been overpaid because their separate operations had to be classified as one farm under the above definitions, and applying the scaledown provisions to the single operation resulted in a smaller earned payment.

If you plan to change your operation or set up a new operating entity it is suggested that you review the proposed setup with the county ASC committee to find out where you will stand under the sugar program regulations. Incidentally, the above definitions are now being reviewed by ASCS people with the idea of making them simpler.

(Continued on page 48)

AN OUTLOOK

Agriculture And The Sugar Industry

By R. T. Johnson

WITH the population of the United States turning 200,000,000 in the last few weeks and with the expectation of a staggering 300,000,000 people within a few short decades, the point at which we now find ourselves requires some sober thoughts for the future. Not only will our open space diminish to provide space for homes, highways, commercial and industrial sites for burgeoning populations, but productive agricultural land will become progressively less available as a source of food and fiber for the masses of humanity.

The National Advisory Commission on Food and Fiber published a booklet in August of 1967 entitled "Food Needs and U.S. Agriculture in 1980." This study, which is an analysis of land, labor and capital requirements under varying levels of exports and alternative farm programs, predits, in summary, that agricultural labor requirements will be substantially reduced by 1980, that agricultural land will still be more than adequate to meet the U.S. needs, and that the average farm will continue to increase in size. Most crop yields will continue to improve through technology and agricultural capital requirements will increase. Enlarging farm size and capital requirements and higher yields will require continuous improvement in levels of management as well as increased use of all farm applied chemicals. The complexity of farming by 1980 may well require operators to consult "electronic brains" for drawing up plans and cropping systems. Adequate sources of farm credit will be absolutely necessary. The beginning farm operator may well need to know as much about establishing the capital structure for a small corporation as he may about planting dates and fertilizer requirements.

We live in a world of almost miraculous scientific achievement. We accept today as commonplace feats that were only dreamed of a few short years ago. The food industry has not escaped these advances. The synthesis of certain fats, carbohydrates, proteins and other nutrients, while already an achievement, are still a long distance from becoming a competitive food source. While it is theoretically possible to dine on "ham" and "sausage" made of concentrated alfalfa protein and a carbohydrate produced from the cellulose in newsprint or wood-pulp; artificially produced, flavored, colored and textured, meals are far from realization.

Perhaps the biggest change in food consumption patterns is the demand for convenience foods. These are foods prepared and packaged in a form which requires a minimum effort between the grocer and the dining table. Examples of such preparations include the well-known TV dinner, the packaged cake mix, dehydrated soups, instant whipped potatoes, and individual servings of catsup, mustard, salt, pepper, sugar and many others. None of these items offered to the consumer by-pass the farm, but do place more emphasis upon the processor's place in the preparation of farm produce before its ultimate consumption. It is unlikely that significant change in this trend will come about for a long period of time.

With more mouths to feed and stomachs to fill, a greater demand will be made of the decreasing agricultural land. Although the farm economy will continue to be as cyclic as before for short term periods, the long term trend of greater demand and the threat of a decreasing productive land mass should generate a favorable climate for the agricultural enterprises of the United States. Survival even under these conditions is apt to continue to emphasize size of operation, maximum per acre productivity and modern, alert agricultural managers.

Where does sugar fit this future picture? *One astonishing fact about sugar is that it comprises almost 20% of our diet.* The average food intake per person ranges from 1,500 to 1,800 pounds per year, of which 65% to 70% is water. This leaves approximately 500 pounds equivalent of dry solids in our total food intake. Of this 500 pounds, 100 pounds, or 20%, is sugar. The sugar referred to here is sucrose as derived from beet or cane and does not include the sugars consumed in fresh fruits, corn syrups and sugars, and honey. The reason this statistic seems so difficult to believe is that we consume sugar in so many ways in addition to that which we use from the sugar bowl on the table. Major sugar users include soft drink bottlers, the canning industry, manufacturers of ice creams and

(Continued on Page 48)

Dr. Johnson received a Doctorate degree in plant genetics from the University of Minnesota. He joined Spreckels Sugar Company in 1950 and was placed in charge of Agricultural Research. He is currently Vice President of the Agricultural Department and Director of Research which encompasses both departments of Agricultural and Chemical Research.

Familiar White Diamonds In A Brand New Package

New "rip cord" opening device is a major departure in the field food packaging

SPRECKELS SUGAR in a brand new package is now available at grocery stores throughout the company's marketing territory.

Eye-catching and practical, the taller, narrower granulated sugar package is a whirlpool movement of deep yellow on a light yellow background.

The Spreckels' brand identification is a white bullseye slightly off-center on the front of the package.

Quite a departure from the familiar red, white and blue that has dominated Spreckels' consumer packages for 14 years.

The new package design and colors are carried completely through the consumer sugar product line, including brown sugars, one-pound granulated, powdered sugar and sugar cubes (see color insert).

To help familiarize shoppers with the new package design and introduce consumers to the new "rip-cord" opening device, Spreckels is utilizing 15-second television spot commercials, newspaper advertising and food page publicity. The new package introductory phase is expected to continue through the spring.

WELL-TESTED DESIGN

Two years of research and consumer testing preceded the selection of the new "rip-cord" design. Further "in-depth" consumer testing determined the selection of colors used on the new packages.

The adaptation of the "rip-cord" opener is a major departure in food packaging. However, test after test proved its superiority over other types of packaging. Consumer testing further indicated the marked preference women have for the "rip-cord" opening device for sugar packaging.

As an important plus for grocers, Spreckels new five- and ten-pound granulated sugar containers stack neater and stay neater on the grocery store shelf — important factors in retailer labor costs.

Additionally, the "bale" or container in which the retail grocer receives his sugar has been redesigned to further cut grocer costs through labor reduction and elimination of waste.

Careful planning of inventories is allowing the phase-out of Spreckels old package line with a minimum of inconvenience to the grocer.

WHITE DIAMONDS for your sugar bowl. This is the new eye-catching one-pound package of Spreckels granulated sugar.

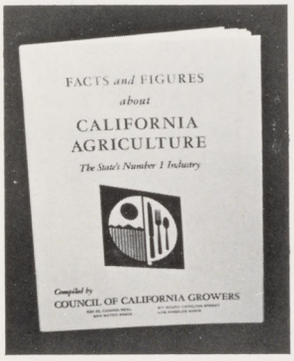
SPRECKELS cube sugar, a long time favorite for many types of uses now comes in this new striking package.

Council of California Growers Publishes New Booklet

THE Council of California Growers has published a new reference booklet entitled "Facts and Figures About California Agriculture — The State's Number One Industry."

It is being readied for distribution among schools, the news media, libraries—or anyone who writes for a copy.

"Because all of the material comes from official sources, and careful research by our own staff, we consider this booklet to be the most reliable source of information about California agriculture currently in existence," states O. W. Fillerup, the Council's executive vice president.



"One outstanding feature which we feel readers will appreciate is the translation of statistics into comparative charts and graphs."

Here's just a sample of some of the information contained in the booklet.

(1) California agriculture produced $4 billion worth of new wealth in 1966, more than in any other state.

(2) Total economic impact of this $4 billion is estimated at $16 billion . . . including values added through food processing, packaging, transporting, storing and selling.

(3) One out of three jobs in California rests on agriculture, directly or indirectly.

(4) California annually exports more than one-half billion dollars worth of farm products.

Copies of the booklet may be obtained by writing to:

Council of California Growers
520 El Camino Real
San Mateo, California 94402

San Luis Progress Report

The San Luis Canal contained water as far south as Seventh Standard Road in Kern County by late December. Initial deliveries in Kern County are to be made sometime in January, 1968.

Westlands Water District delivered water on its north end as early as November, 1967. Westlands laterals one through five should be operable sometime in January, 1968.

SAN LUIS CANAL is shown here as it intersects Fairfax Avenue and Silver Creek, some 35 miles south of the San Luis Dam.

California Weed Conference To Be Held At Sacramento

THE ever-widening scope of interest in weed control will be amply demonstrated at the 20th Annual California Weed Conference to be held at the El Rancho Motel, Sacramento, California January 22-24, 1968.

Every year this conference has found it necessary to broaden the range of information it must present due to the multitude of new compounds and new techniques that are offered each year.

Two papers at the conference in 1968 will be given that emphasize the variety of information to be presented.

Mr. Jack Corkins, Research Biologist for Uniroyal Chemical will provide a comprehensive review of industry's close involvement in weed control problems and research, and how the involvement has progressed and expanded from simple screening to present day industrial research stations.

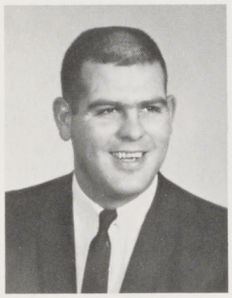
At the other end of the spectrum, Mr. James A. Beutel, Extension Pomologist, University of California, Davis will report on what is termed "Strip Weed Control" as it applies to fruit orchards.

The conference will also include a panel discussion of row crops including sugar beets, tomatoes, and corn on Tuesday, January 23.

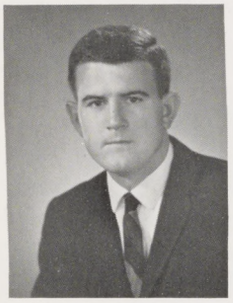
AGRICULTURAL STAFF CHANGES

A REPORT ON RECENT CHANGES INVOLVING STAFF MEMBERS

Laurn Beutler



Jack H. Griffin



Ronald Jones

Carlton Schaffer

Denzil H. Farbo

Laurn Beutler to Coalinga College

☐ Laurn Beutler, Research Agronomist at Mendota recently accepted a position on the staff at Coalinga Junior College as an agricultural instructor.

Mr. Beutler is a native of Dayton, Idaho. He received a Bachelor of Science degree in Agronomy from Utah State University and a Master of Science degree in Agronomy from Oregon State University. He served as a Research Agronomist at the Oregon State Experiment Station until 1963 when he joined Spreckels Sugar Company.

He is a member of the American Society of Agronomy and the American Society of Sugar Beet Technologists.

Mr. Beutler and family will reside in Coalinga.

Jack H. Griffin - Kerman and Madera

☐ Jack H. Griffin is presently the Field Superintendent in the Kerman and Madera areas of the Mendota District. He was employed by Spreckels Sugar Company in February, 1965 as an Assistant Field Superintendent and assigned to Woodland, California. In December, 1965 he was transferred to the Mendota District as a Field Superintendent.

Mr. Griffin is from Gilroy, California and a graduate of California State Polytechnic College at San Luis Obispo where he majored in Agricultural Business Management.

Mr. Griffin, his wife, Nikki and two sons, Timothy and Duane, (a recent addition) live in Fresno, California.

Ronald Jones Joins Mendota Staff

☐ Ronald Jones recently joined Spreckels Sugar Company's Agricultural Department as an Assistant Field Superintendent. He is currently working with the agricultural research staff in District 4, Mendota.

He is a native of Bakersfield, California and attended California State Polytechnic College at San Luis Obispo where he received a degree in Agricultural Business Management.

Mr. Jones, his wife, Kathleen and two children reside in Fresno, California.

Carlton Schaffer - Del Paso and Tudor

☐ Carlton Schaffer was designated as the Field Superintendent in the Del Paso and Tudor areas of District 3, Woodland, this past year. He joined Spreckels Sugar Company in November, 1965 as an Assistant Field Superintendent and was subsequently promoted to Field Superintendent in early 1966.

A native of Orland, California, Mr. Schaffer attendent Chico State College where he majored in Agricultural Mechanics. He spent two years in the Army and served part of his time in the Pentagon.

Mr. Schaffer and his wife Arlene, reside in Woodland.

Denzil H. Farbo Joins Arizona Staff

☐ Denzil H. Farbo is the newest addition to Spreckels Sugar Company's staff in Arizona. His current position is that of an Assistant Field Superintendent.

Mr. Farbo hails from Cando, North Dakota. He attended North Dakota State University where he majored in Agriculture with an emphasis on agricultural engineering. He is a member of the American Society of Agricultural Engineers and the North Dakota Air National Guard.

Mr. Farbo, his wife, Mark and their two children live in Chandler, Arizona.

AGRICULTURAL STAFF NOTES

PHOSPHATE DEFICIENCIES

Laurn Beutler
Agronomist, Mendota

WINTER planted sugar beets which appear to be deficient of nitrogen in the months of April, May and June may actually be deficient of phosphate. This was demonstrated in the Goshen, Lincoln (Kerman) and Burrel areas this year.

Research plots established in grower fields showed yield increases of 4 to 9 tons per acre. Though some fields will probably not show this response, it is possible that phosphate could still be limiting sugar beet growth in our winter plantings and an application could more than pay for itself.

Soil tests for phosphate are considered fairly accurate as a tool in predicting a phosphate need.

If you are not using phosphate in your current fertilizer program it probably would be wise to take a soil sample and have it analyzed.

The sample should consist of 5 to 10 sub samples taken at random throughout the field. The sub samples should be mixed thoroughly into a composite sample of about 2 pounds. A soil tube or shovel can be used to sample the top 12 inches of soil.

The sample or samples may then be sent to a laboratory for analysis. A test for water extractable phosphate will probably cost $4.00 to $5.00 per sample. A complete analysis of 14 different determinations (nitrogen, potash, etc.) will cost approximately $14.00 to $15.00.

The sample results are generally expressed in parts per million (p.p.m.). Over 10 p.p.m. would generally mean an adequate level of phosphate, under 5 p.p.m. requires some additional phosphate, and 1 to 2 p.p.m. is a deficient level.

If a need is indicated, proper preplant placement is important. Placement of 5 to 6 inches directly under the seed is critical as the seedling root grows straight down the first 8-10 weeks after emergence.

COVER COMMENT: This photograph was taken in a November-planted sugar beet field west of Mendota.

The chemical samples were secured through the generous cooperation of the Melville E. Wilson Company, The Stauffer Chemical Company and Bill Fischer, Fresno County Farm Advisor.

NITROGEN STRIPS

Morris Ball
Field Superintendent, Bakersfield

THE nitrogen strip technique has been quite successful the past two years in helping growers to reduce pulp, nitrate readings and better yet, increase their crop's sugar content. There have been a number of fields however where this method of nitrogen management seemed to be unsuccessful.

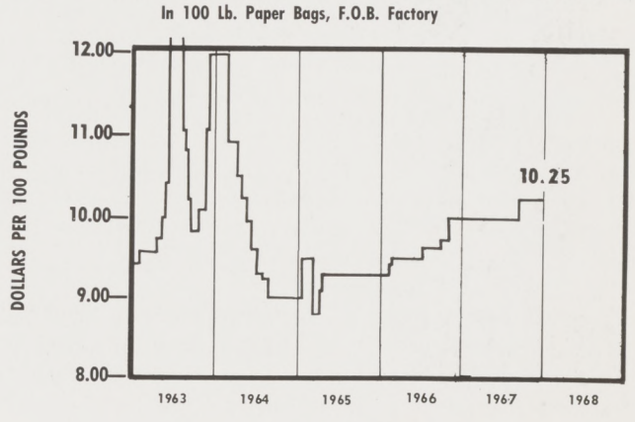
When the fertilizer records and general cultural practices of the fields involved were reviewed, one important factor stood out above all the others; in each of these fields, a preplant phosphate fertilizer such as 16-20-0 had been used. The zero strip was left as recommended without the addition of any fertilizer. When a color or vigor difference between the field and the strip was noted, additional nitrogen was applied according to the Guide Lines to Nitrogen Management Chart. Since several of the phosphorous deficiency symptoms are similar to those of nitrogen, it is therefore possible the deficiencies noted were phosphorous and not nitrogen.

In the future, an under the seed application of single super phosphate will be recommended for the "zero" strips. This should help to eliminate any problems encountered in reading nitrogen requirements in fields where phosphorous deficiencies have been noted.

Editor's Note: The March-April, 1965 issue of the Bulletin contained an article by Laurn Beutler entitled "Nitrogen Management is a Paying Proposition". The article explained the use of the nitrogen strip technique.

QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. Factory



SUGAR ACT REGULATIONS

(Continued from page 42)

PREVENTED ACREAGE

In years when restrictive proportionate shares are not in effect, the Sugar Act provides history acreage protection for growers who are unable to plant beets because of drought, flood, storm, freeze, disease, insects or other uncontrollable natural conditions. It also protects history on beets planted and abandoned because of damage from wild animals, which is not covered under the abandonment provisions in paragraph 2 of this article.

To qualify, the acreage must be located in an area where at least 10 percent of the farms or 10 percent of the acreage were affected. The request for prevented acreage credit must be made by the grower at the ASCS county office by November 15 of the current year in the Northern Area and by January 15 of the following year in the Southern Area.

RELEASED ACREAGE CREDIT

In proportionate share years, the law provides that a grower may receive history credit by releasing his proportionate share, or any part of it that he cannot plant because of a crop-rotation system or other reasons beyond his control, to the county committee. The acreage released may be reallotted by the county committee to other growers. The grower who releases the acreage receives history credit; the grower who plants the reallotted acreage does not.

EXPEDITING CONDITIONAL PAYMENTS

Our county offices have instructions to commence preparing applications for payment as soon as marketing reports showing the total production of sugar are received from the sugar company. You can speed up the processing of your payment by doing the following things:

(1) As soon as you know what land you will be operating for the year, go in to the county office and give them this information which is necessary for preparing the application for payment.

(2) Keep accurate records on wages paid to field laborers so that they will be available in case your operation is selected for a spot check of minimum wage compliance.

(3) Report beet acreage which you intend to abandon to the county office BEFORE you destroy the beets.

(4) If your beets have suffered damage and you think you might have a deficiency in production, report this to the county office before the beets are harvested. This gives the county office the opportunity to determine the cause of the deficiency while the beets are still in the ground and thereby avoid a delay in processing your application.

(5) Open your mail. The county office may have sent you a notice that your application is ready for signature and we can't pay you until the application is signed.

AGRICULTURE AND THE SUGAR INDUSTRY

(Continued from page 43)

candies, prepared cake, pie and other dessert mixes, etc.

Sucrose is an unparallelled source of body energy. It is inexpensive per unit of energy and perhaps tastes better than any other food stuff.

With the constant reduction of available farm land, the eventual importance of production of nutrients per acre will become a major consideration in determining farm land use. Those crops which produce the largest number of nutritional units per acre may eventually become mandatory. The sugar beet in the form of sugar, pulp, molasses and tops is well endowed in this regard because it is edible "horns, hide, hoof and tallow". None of this crop need be wasted.

Much of this speculation concerns a future which in terms of the age of this planet is but seconds away; perhaps even within the life span of today's children. But because it is in the uncharted future, the natural inclination is to view it with passing interest only and to return to the present which can be brought into sharper focus.

The prospects for today's U. S. sugar production have never been brighter. Markets are firm, particularly in the west, and the farmer's price for sugar beets can be expected to improve beyond the '67 crop levels. California production is not being maintained at its historical share of the U. S. production (about one-fourth of the total U. S. beet sugar has historically originated in California). It is imperative to increase sugar beet acreage if California farmers want to continue to enjoy this level of production. California's ability to produce needs to be demonstrated now, otherwise significant acreage reduction will occur at some future time upon the imposition of acreage restrictions. There are no restrictions on United States sugar beet production in 1968 and it is believed probable there will be none in 1969. The short term outlook for sugar beets is good. In fact, the economic climate has never been better for including beets in a cropping program.

SPRECKELS SUGAR BEET BULLETIN

Spreckels Sugar Beet Bulletin is issued quarterly by the Agricultural Department of Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.

All photographs by the editor unless otherwise specified.

All communications should be addressed to: **Spreckels Sugar Beet Bulletin, P. O. Box 325, Mendota, California 93640.**

GERALD NORDSTROM, EDITOR

SPRECKELS SUGAR COMPANY MENDOTA, CALIFORNIA

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